LINE NO 21

TM 11-5820-287-12

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

AS-756 ANT 1-26,27
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Power pg 3-31

ORGANIZATIONAL MAINTENANCE MANUAL

RADIO SETS AN/TRC-24, AN/GRC-75, AN/GRC-78, AN/GRC-81, AND AN/GRC-81A; RADIO TERMINAL SETS AN/TRC-35, AN/GRC-76, AN/GRC-79, AND AN/GRC-82; RADIO RELAY SET AN/TRC-36; RADIO REPEATER SETS AN/GRC-77, AN/GRC 80, AND AN/GRC-83; AND RADIO SET GROUPS AN/TRA-25, AN/TRA-25A, AND OA-3668A/TRC-24

This copy is a reprint which includes current pages from Changes 1 through 5.

HEADQUARTERS, DEPARTMENT OF THE ARMY
APRIL 1967

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if operating personnel fail to observe safety precautions.

DANGEROUS VOLTAGES ARE PRESENT AT THE FOLLOWING UNITS:

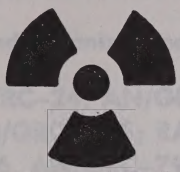
Transmitter, Radio T-302/TRC, T-302A/TRC, and T-302B/TRC.	750 volts direct current.
Power Supply PP-685/TRC and PP-685A/TRC	900 volts direct current.
Transformer, Power, Fixed Autotransformer TF-167/TRC.	115 or 230 volts, 50 to 60 cycles.

W A R N I N G

SELENIUM RECTIFIER

Rectifier CR1 in Power Supply PP-685(*)/TRC is a selenium rectifier. Selenium rectifiers release poisonous fumes when they burn out or arc over. Selenium fumes have an odor resembling garlic or rotten eggs. When this odor is first noticed, the power to the PP-685(*)/TRC should be switched off and the area evacuated. Prior to re-entry, the area should be ventilated to disperse the fumes. Selenium and its compounds are toxic; their effects on the body resemble those of arsenic. Overheated selenium rectifiers should not be handled with bare hands.

WARNING
RADIATION HAZARD



Ra 226

RADIOACTIVE MATERIALS EXIST IN RADIO SET GROUP OA—1387/GRC.

RADIATION HAZARD INFORMATION: THE FOLLOWING RADIATION HAZARD INFORMATION MUST BE READ AND UNDERSTOOD BY ALL PERSONNEL BEFORE OPERATING THE OA—1387/GRC. HAZARDOUS RADIOACTIVE MATERIALS ARE PERMANENTLY INSTALLED IN THE METERS LOCATED ON THE CONTROL PANELS OF TRANSMITTER T—302/TRC, RECEIVER R—417/TRC, AND POWER SUPPLY PP—685/TRC, IN THE FORM OF RADIUM PAINT. IF ANY OF THESE METERS SHOULD BE BROKEN TO THE EXTENT THAT THE RADIUM PAINT IS EXPOSED, NOTIFY THE LOCAL RADIOLOGICAL PROTECTION OFFICER (RPO) IMMEDIATELY. THE LOCAL RPO WILL SURVEY THE IMMEDIATE AREA FOR RADIOLOGICAL CONTAMINATION AND WILL SUPERVISE THE REMOVAL OF BROKEN METER(S). THE LOCAL RPO WILL ALSO DISPOSE OF THE BROKEN METER(S) IN ACCORDANCE WITH AR 755—15.

THESE RADIOACTIVE METERS WILL NOT BE DISASSEMBLED EXCEPT BY QUALIFIED PERSONNEL OF NUCLEONICS FACILITIES AT LEXINGTON, SACRAMENTO, AND TOBYHANNA ARMY DEPOTS IN CONUS, AND SAUMUR GENERAL DEPOT AND PIRMASENS GENERAL DEPOT OVERSEAS.

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.

DEATH ON CONTACT

may result if operating personnel fail to observe safety precautions.

DANGEROUS VOLTAGES ARE PRESENT AT THE FOLLOWING UNITS:

Transmitter, Radio T-302/TRC, T-302A/TRC, and T-302B/TRC.	750 volts direct current.
Power Supply PP-685/TRC and PP-685A/TRC	900 volts direct current.
Transformer, Power, Fixed Autotransformer TF-167/TRC.	115 or 230 volts, 50 to 60 cycles.

WARNING

SELENIUM RECTIFIER

RECTIFIER CR1 IN POWER SUPPLY PP-685(*)/TRC IS A SELENIUM RECTIFIER. SELENIUM RECTIFIERS RELEASE POISONOUS FUMES WHEN THEY BURN OUT OR ARC OVER. SELENIUM FUMES HAVE AN ODOR RESEMBLING GARLIC OR ROTTEN EGGS. WHEN THIS ODOR IS FIRST NOTICED, THE POWER TO THE PP-685(*)/TRC SHOULD BE SWITCHED OFF AND THE AREA EVACUATED. PRIOR TO RE-ENTRY, THE AREA SHOULD BE VENTILATED TO DISPERSE THE FUMES. SELENIUM AND ITS COMPOUNDS ARE TOXIC, THEIR EFFECTS ON THE BODY RESEMBLE THOSE OF ARSENIC. OVERHEATED SELENIUM RECTIFIERS SHOULD NOT BE HANDLED WITH BARE HANDS.

TECHNICAL MANUAL
No. 11–5820–287–12

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *19 April 1967*

Operational and Organizational Maintenance Manual

RADIO SETS AN/TRC–24, AN/GRC–75, AN/GRC–78, AN/GRC–81, AND AN/GRC–81A; RADIO TERMINAL SETS AN/TRC–35, AN/GRC–76, AN/GRC–79, AND AN/GRC–82; RADIO RELAY SET AN/TRC–36. RADIO REPEATER SETS AN/GRC–77, AN/GRC–80, AND AN/GRC–83; RADIO SET GROUPS AN/TRA–25, AN/TRA–25A, AND OA–3668A/TRC–24

			Paragraph	Page
CHAPTER	1.	INTRODUCTION		
Section	I.	General	1–1—1–3.1	1–1—1–2
	II.	Description and data	1–4—1–9	1–2—1–50
CHAPTER	2.	INSTALLATION		
Section	I.	Service upon receipt of equipment	2–1—2–4	2–1—2–61
	II.	Initial adjustment of equipment	2–5—2–8	2–62—2–65
CHAPTER	3.	OPERATING INSTRUCTIONS		
Section	I	Operating controls and indicators	3–1—3–3	3–1—3–22
	II.	Operating under usual conditions	3–4—3–11	3–23—3–44
	III.	Condensed tuning procedure for Radio Set AN/TRC–24 (Bands B and C)	3–12—3–22	3–44—3–48
CHAPTER	4.	MAINTENANCE INSTRUCTIONS		
Section	I.	Operator's maintenance	4–1—4–9	4–1—4–5
	II.	Organizational maintenance	4–10—4–19	4–5—4–72
CHAPTER	5.	AUXILIARY EQUIPMENT	5–1—5–3	5–1—5–3
	6.	SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE	6–1—6–4	6–1—6–2
APPENDIX	A.	REFERENCES		A–1
	B.	BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)		
Section	I.	Introduction		B–1
	II.	Basic issue items list		B–2
	III.	Items troop installed or authorized list		B–3
	C.	MAINTENANCE ALLOCATION		
	I.	Introduction		C–1
	II.	Maintenance allocation chart (AN/TRC–24)		C–2

*1. This manual supersedes:
TM 11–5820–287–10, 19 September 1960 including C 1, 11 September 1961; C 2, 8 May 1962; C 3, 8 February 1963, C 4, 5 June 1963; and C 5, 8 July 1963; TM 11–5820–287–20, 9 January 1961 including C 1, 11 September 1961; C 2, 20 December 1961; C 3, 7 May 1962; C 4, 8 February 1963; and C 5, 18 July 1963 and C 1, 3 July 1962 of TM 11–5820–278–12P, 21 September 1961; C 1, 28 June 1960 of TM 11–5820–279–12P, 16 October 1958; C 1, 24 August 1962 of TM 11–5820–282–12P, 2 June 1960; C 1, 26 April 1962 of TM 11–5820–309–12P, 4 May 1959 and C 1, 28 November 1961 of TM 11–5820–311–12P, 23 April 1959.

2. This manual also supersedes so much of the following publications as pertains to First Echelon Function Parts Lists:
TM 11–5820–263–12P, 7 June 1960 including C 1, 7 April 1964; TM 11–5820–278–12P, 21 September 1961, TM 11–5820–279–12P, 16 October 1958; TM 11–5820–282–12P, 2 June 1961; TM–5820–293–12P, 17 October 1960; TM 11–5820–301–12P, 21 August 1961; TM 11–5820–302–12P, 13 July 1959, TM 11–5820–303–12P, 24 April 1959 including C 1, 26 July 1960; TM 11–5820–309–12P, 4 May 1959; TM 11–5820–310–12P, 10 July 1959 including C 1, 19 May 1964; TM 11–5820–312–12P, 20 February 1961 including C 1, 28 August 1962, TM 11–5820–257–12P, 22 June 1962; TM 11–5820–311–12P, 23 April 1959; and TM 11–5820–506–12P, 9 March 1964.

			Page
Section	III.	Maintenance allocation chart (OA-1387/GRC and OA-1387A/GRC)	C-9
	IV.	Tool and test equipment requirements (OA-1387/GRC and OA-1387A/GRC	C-13
	V.	Maintenance allocation chart (OA-1389/GRC)	C-15
	VI.	Tool and test equipment requirements (OA-1389/GRC	C-1
	VII.	Maintenance allocation chart (OA-1390/GRC)	C-
	VIII.	Tool and test equipment requirements (OA-1390/GRC)	C-
	IX.	Maintenance allocation chart (OA-1391/GRC)	C-20
	X.	Tool and test equipment requirements (OA-1391/GRC)	C-21
	XI.	Maintenance allocation chart (OA-1392/GRC)	C-22
	XII.	Tool and test equipment requirements (OA-1392/GRC)	C-25
	XIII.	Maintenance allocation chart (OA-1393/GRC)	C-26
	XIV.	Tool and test equipment requirements (OA-1393/GRC)	C-28
	XV.	Maintenance allocation chart (OA-1394/GRC)	C-29
	XVI.	Tool and test equipment requirements (OA-1394/GRC)	C-32
	XVII.	Maintenance allocation chart (OA-1395/GRC)	C-33
	XVIII.	Tool and test equipment requirements (OA-1395/GRC)	C-35
	XIX.	Maintenance allocation chart (OA-1396/GRC	C-36
	XX.	Tool and test equipment requirements (OA-1396/GRC)	C-38
	XXI.	Maintenance allocation chart (OA-1397/GRC)	C-39
	XXII.	Tool and test equipment requirements (OA-1397/GRC)	C-40
	XXIII.	Maintenance allocation chart (OA-1398/GRC)	C-41
	XXIV.	Tool and test equipment requirements (OA-1398/GRC)	C-42
	XXV.	Maintenance allocation chart (OA-1676/GRC)	C-43
	XXVI.	Tool and test equipment requirements (OA-1676/GRC)	C-45
	XXVII.	Maintenance allocation chart (OA-3668A/TRC-24)	C-46
	XXVIII.	Tool and test equipment requirements (OA-3668A/TRC-24)	C-50
	XXIX.	Maintenance allocation chart (AN/TRA-25, AN/TRA-25A, and AN/TRA-25B)	C-51
	XXX.	Tool and test equipment requirements (AN/TRA-25, AN/TRA-25A, and AN/TRA-25B)	C-55
	XXXI.	Maintenance allocation chart (CX-4693/U, CX-2251/U)	C-56
	XXXII.	Tool and test equipment requirements (CX-4693/U, and CX-2251/U)	C-5
INDEX			Index

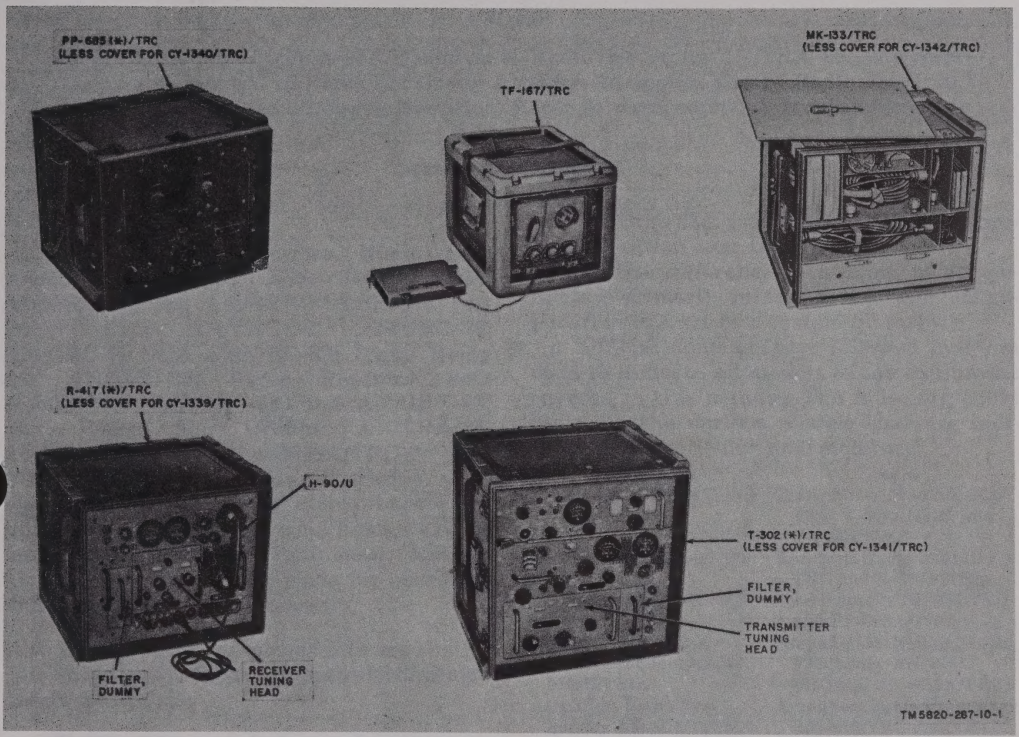


Figure 1-1. Radio Set Group OA-1387/GRC with transmitter tuning head installed in Transmitter, Radio T-302/TRC and T-302A/TRC and receiver tuning head and Handset H-90/U installed in Receiver, Radio R-417/TRC and Receiver, Radio R-417A/TRC.

CHAPTER 1
INTRODUCTION

NOTE

Radio Set Group AN/TRA-25A is similar to Radio Set Group AN/TRA-25. Any reference in this manual to Radio Set Group AN/TRA-25 applies also to Radio Set Group AN/TRA-25A unless otherwise specified. Refer to paragraph 1-9 for differences in models.

Section I. GENERAL

1-1. Scope

a. This manual describes Radio Sets AN/TRC-24, AN/GRC-75, AN/GRC-78, AN/GRC-81, and AN/GRC-81A; Radio Terminal Sets AN/TRC-35, AN/GRC-76, AN/GRC-79, and AN/GRC-82; Radio Relay Set AN/TRC-36; Radio Repeater Sets AN/GRC-77, AN/GRC-80, and AN/GRC-83; and Radio Set Groups AN/TRA-25, AN/TRA-25A, and OA-3668A/TRC-24 (fig. 1-1), and covers their operation and operator's maintenance. It includes operation under usual and unusual conditions, cleaning and inspection of the equipment, and replacement of authorized parts for operators and organizational repairmen.

b. All the radio equipment sets are similar, but differ in the type and quantity of components (para 1-6).

(1) The difference in types of components is primarily related to the frequency band over which a particular set may be operated. The AN/TRC-24, AN/TRC-35, and AN/TRC-36 are equipped for B- and C-band operation; the AN/GRC-75, AN/GRC-76, and AN/GRC-77 for A-band operation; the AN/GRC-78, AN/GRC-79, and AN/GRC-80 for B- and D-band operation; and the AN/GRC-81, AN/GRC-82, and AN/GRC-83 for C-band operation. The AN/TRA-25 may be used with sets which contain B-band facilities to provide operation over the F-band. The OA-3668A/TRC-24 may be used with the radio sets, radio terminal sets, radio repeater sets, and the radio relay set (*a* above) to provide operation over the J-band.

(2) The difference in number of components is primarily related to the intended application of a set in a system (para 1-4).

c. Official nomenclature followed by (*) is used to indicate all models of the equipment covered in this manual. The following chart indicates the various models that are indicated by a particular nomenclature.

Nomenclature	*Models*
Transmitter, Radio T-302(*)/TRC.	Transmitter, Radio T-302/TRC, T-302A/TRC, and T-302B/TRC.
Receiver, Radio R-417(*)/TRC.	Receiver, Radio R-417/TRC and R-417A/TRC.
Power Supply PP-685(*)/TRC.	Power Supply PP-685/TRC and PP-685A/TRC.
Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC.	Amplifier-Multiplier, Radio Frequency AN-915/TRC and AM-915A/TRC.
Amplifier, Radio Frequency AM-912(*)/TRC.	Amplifier, Radio Frequency AM-912/TRC and AM-912A/TRC.

1-2. Indexes of Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfac-

tory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP PUB 378 (Navy)/AFR 71-4 (Air Force)/and MCO P4030.29 (Marine Corps).

*c. Discrepancy in Shipment Report (DISREP) (SF 361).*UT AND FORWARD Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army)/NAVSUP PUB 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

1-3.1 Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-CR, Fort Monmouth, NJ 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. The radio equipment sets covered in this manual (para 1-1) provide the terminal and intermediate point (repeater) facilities for radio sections of multichannel communications systems using carrier equipment such as Telephone Terminals AN/TCC-7 (TM 11-2139-10, TM 11-2150). Other types of carrier telephone terminal equipment may be used if their technical characteristics permit (para 1-5).

b. Radio sets, as differentiated from radio terminal sets and radio repeater (or relay) sets (for example, Radio Set AN/TRC-24), may be used at the terminal ends of a radio section, or they may be used in pairs at intermediate points in the section. However, in most cases, *radio sets* are combined with other equipments to form other nomenclature sets which are intended for specific use as terminal sets or as repeater (or relay) sets (para 1-6). *For Example,* Radio Terminal Set AN/TRC-35 includes all of the components of one Radio Set AN/TRC-24 plus additional equipment; this set is for use at the terminal ends of a radio section. Radio Relay Set AN/TRC-36 includes most of the components of two Radio Sets AN/TRC-24 plus additional equipment; this set is intended for use at intermediate points to extend the range of the section between terminals.

c. In some cases, most of the major components of one of more *radio sets* are used as a part of a shelter-housed radio terminal or repeater set. *For example,* Radio Terminal Set AN/MRC-69(V) (TM 11-5820-204-15) includes major components to two *radio sets*; Radio Repeater Set AN/MRC-54(V) (TM 11-5820-203-15) includes major components of three *radio sets.*

1-5. Technical Characteristics

a. Transmitter, Radio T-302(*)/TRC.

Frequency range:	
Amplifier, Radio Frequency AM-1180/GRC (A-band):	
Frequency range	50 to 100 mcs.
Number of channels	200.
Channel separation	0.25 mcs.
Amplifier, Radio Frequency AM-912(*)/TRC (B-band):	
Frequency range	100 to 225 mcs.
Number of channels	250.
Channel separation	0.5 mcs.
Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC (C-band):	
Frequency range	225 to 400 mcs.
Number of channels	175.
Channel separation	1 mcs.
Amplifier-Multiplier, Radio Frequency AM-1178/GRC (D-band):	
Frequency range	400 to 600 mcs.
Number of channels	133.
Channel separation	1.5 mcs.
Amplifier-Converter AM-2537/TRA-25 (F-band (*low*)):	
Frequency range	790 to 915 mcs.
Number of channels	250.
Channel separation	0.5 mcs.
Amplifier-Converter AM-2537/TRA-25 (F-band (*high*)):	
Frequency range	840 to 965 mcs.

Number of channels ---------- 250.
Channel separation ---------- 0.5 mcs.

Amplifier-Converter AM–3204A/TRC–24, with Oscillator-Multiplier 0–902A/TRC–24 (J-band (low)):

Frequency range ---------- 1,350 to 1,525 mcs.
Number of channels ---------- 450.
Channel separation:
A scale ---------- 0.25 mcs.
B scale ---------- 0.5 mcs.

Amplifier-Converter AM–3204A/TRC–24, with Oscillator-Multiplier 0–903A/TRC–24 (J-band (medium)):	
Frequency range	1,525 to 1,700 mcs.
Number of channels	450.
Channel separation:	
A scale	0.25 mcs.
B scale	0.5 mcs.
Amplifier-Converter AM–3204A/TRC–24, with Oscillator-Multiplier 0–904A/TRC–24 (J-band (high)):	
Frequency range	1,700 to 1,875 mcs.
Number of channels	450.
Channel separation:	
A scale	0.25 mcs.
B scale	0.50 mcs.
Transmitter type	Reactance tube modulated oscillator.
Power output	50 to 120 w.
Type of modulation	Fm.
Type of transmission	Voice and multi-channel carrier.
Number of carrier channels	12 max (T–302B/TRC—24 max).
Base-band frequency range:	
T–302B/TRC	250 to 108,000 cps.
T–302/TRC and T–302A/TRC.	250 to 68,000 cps.
Voltage requirements:	
Filaments	2.5 and 6.3 v, 50 to 60 cps.
Blower motors	115 v, 50 to 60 cps.
B+	150, 250, and 750 vdc.
Input impedance	135 or 600 ohms.
Output impedance	52 ohms.
Transmission range (line of sight).	30 mi. approx.
Frequency stability	Crystal-controlled, afc circuits.
Number of tubes when used with:	
AM–912(*)/TRC or AM–1180/GRC.	26.
AM–915(*)/TRC or AM–1178/GRC.	27.
AM–2537/TRA–25	31.
AM–3204A/TRC–24 and 0–902A/TRC–24, 0–903A/TRC–24, or 0–904A/TRC–24.	31.

b. Reciever, Radio R-417(*)/TRC.

Frequency range:	
Amplifier-Converter AM–1179/GRC (A-band).	50 to 100 mcs.
Amplifier-Converter AM–913/TRC (B-band).	100 to 225 mcs.
Amplifier-Converter AM–914/TRC (C-band).	225 to 400 mcs.
Amplifier-Converter AM–1177/GRC (D-band).	400 to 600 mcs.
Amplifier-Converter AM–913/TRC with Mixer Stage, Frequency CV–932/TRA–25 (F-band).	790 to 965 mcs.
Amplifier-Converter AM–3203A/TRC–24, and Filter, Band Pass F–691/TRC–24 (J-band).	1,350 to 1,875 mcs.
Receiver type	Superheterodyne.
Type of reception	Frequency modulated carrier.
Base-band frequency range:	
Equipment bearing Order No. 39906–PP–58.	250 to 108,000 cps.
All other equipments	250 to 68,000 cps.
Input impedance	52 ohms.
Output impedance	135 or 600 ohms.
Intermediate frequency	30 mcs.
Voltage requirements	115 v, 50 to 60 cps, —12 vdc.
Power consumption	185 w.
Order-wire signaling circuit frequency.	1,600 cps.
Number of tubes: *when used with*—	
AM–1179/GRC	31.
AM–913/TRC	30.
AM–914/TRC	33.
AM–1177/GRC	32.
AM–913/TRC with CV–932/TRA–25.	31.
AM–3203A/TRC–24 with F–691/TRC–24 (J-band).	32.
Frequency control	Afc.
Gain control	Age- and manual-gain control.

c. Radiofrequency Channel Number Frequency Assignment for T-302(*)/TRC and R-417(*)/TRC.

RF channel No.		A-band (50-100 mc)	B-band (100-225 mc)	C-band (225-400 mc)	D-band (400-600 mc)	F-band	
Odd	Even					Low (790-915 mc)	High (840-965 mc)
1		50.125	100.250			790.500	840.500
	2	50.375	100.750			791.000	841.000
3		50.625	101.250			791.500	841.500
	4	50.875	101.750			792.000	842.000
5		51.125	102.250			792.500	842.500
	6	51.375	102.750			793.000	843.000
7		51.625	103.250			793.500	843.500
	8	51.875	103.750			794.000	844.000
9		52.125	104.250			794.500	844.500
	10	52.375	104.750			795.000	845.000
11		52.625	105.250			795.500	845.500
	12	52.875	105.750			796.000	846.000
13		53.125	106.250			796.500	846.500
	14	53.375	106.750			797.000	847.000
15		53.625	107.250			797.500	847.500
	16	53.875	107.750			798.000	848.000
17		54.125	108.250			798.500	848.500
	18	54.375	108.750			799.000	849.000
19		54.625	109.250			799.500	849.500
	20	54.875	109.750			800.000	850.000
21		55.125	110.250			800.500	850.500
	22	55.375	110.750			801.000	851.000
23		55.625	111.250			801.500	851.500
	24	55.875	111.750			802.000	852.000
25		56.125	112.250			802.500	852.500
	26	56.375	112.750	225.500		803.000	853.000
27		56.625	113.250	226.500		803.500	853.500
	28	56.875	113.750	227.500		804.000	854.000
29		57.125	114.250	228.500		804.500	854.500
	30	57.375	114.750	229.500		805.000	855.000
31		57.625	115.250	230.500		805.500	855.500
	32	57.875	115.750	231.500		806.000	856.000
33		58.125	116.250	232.500		806.500	856.500
	34	58.375	116.750	233.500		807.000	857.000
35		58.625	117.250	234.500		807.500	857.500
	36	58.875	117.750	235.500		808.000	858.000
37		59.125	118.250	236.500		808.500	858.500
	38	59.375	118.750	237.500		809.000	859.000
39		59.625	119.250	238.500		809.500	859.500
	40	59.875	119.750	239.500		810.000	860.000
41		60.125	120.250	240.500		810.500	860.500
	42	60.375	120.750	241.500		811.000	861.000
43		60.625	121.250	242.500		811.500	851.500
	44	60.875	121.750	243.500		812.000	862.000
45		61.125	122.250	244.500		812.500	862.500
	46	61.375	122.750	245.500		813.000	863.000
47		61.625	123.250	246.500		813.500	863.500
	48	61.875	123.750	247.500		814.000	864.000
49		62.125	124.250	248.500		814.500	864.500
	50	62.375	124.750	249.500		815.000	865.000
51		62.625	125.250	250.500		815.500	865.500
	52	62.875	125.750	251.500		816.000	866.000
		63.125	126.250	252.500		816.500	866.500
	54	63.375	126.750	253.500		817.000	867.000

RF channel No.		A-band (50–100 mc)	B-band (100–225 mc)	C-band (225–400 mc)	D-band (400–600 mc)	F-band	
Odd	Even					Low (790–915 mc)	High (840–965 mc)
5		63.625	127.250	254.500		817.500	867.500
	56	63.875	127.750	255.500		818.000	868.000
57		64.125	128.250	256.500		818.500	868.500
	58	64.375	128.750	257.500		819.000	869.000
59		64.625	129.250	258.500		819.500	869.500
	60	64.875	129.750	259.500		820.000	870.000
61		65.125	130.250	260.500		820.500	870.500
	62	65.375	130.750	261.500		821.000	871.000
63		65.625	131.250	262.500		821.500	871.500
	64	65.875	131.750	263.500		822.000	872.000
65		66.125	132.250	264.500		822.500	872.500
	66	66.375	132.750	265.500		823.000	873.000
67		66.625	133.250	266.500		823.500	873.500
	68	66.875	133.750	267.500	401.250	824.000	874.000
69		67.125	134.250	268.500	402.750	824.500	874.500
	70	67.375	135.750	269.500	404.250	825.000	875.000
71		67.625	135.250	270.500	405.750	825.500	875.500
	72	67.875	135.750	271.500	407.250	826.000	876.000
73		68.125	136.250	272.500	408.750	826.500	876.500
	74	68.375	136.750	273.500	410.250	827.000	877.000
75		68.625	137.250	274.500	411.750	827.500	877.500
	76	68.875	137.750	275.500	413.250	828.000	878.000
77		69.125	138.250	276.500	414.750	828.500	878.500
	78	69.375	138.750	277.500	416.250	829.000	979.000
79		69.625	139.250	278.500	417.750	829.500	879.500
	80	69.875	139.750	279.500	419.250	830.000	880.000
81		70.125	140.250	280.500	420.750	830.500	880.500
	82	70.375	140.750	281.500	422.250	831.000	881.000
83		70.625	141.250	282.500	423.750	831.500	881.500
	84	70.875	141.750	283.500	425.250	832.000	882.000
85		71.125	142.250	284.500	426.750	832.500	882.500
	86	71.375	142.750	285.500	428.250	833.000	883.000
87		71.625	143.250	286.500	429.750	833.500	883.500
	88	71.875	143.750	287.500	431.250	834.000	884.000
89		72.125	144.250	288.500	432.750	834.500	884.500
	90	72.375	144.750	289.500	434.250	835.000	885.000
91		72.625	145.250	290.500	435.750	835.500	885.500
	92	72.875	145.750	291.500	437.250	836.000	886.000
93		73.125	146.250	292.500	438.750	836.500	886.500
	94	73.375	146.750	293.500	440.250	837.000	887.000
95		73.625	147.250	294.500	441.750	837.500	887.500
	96	73.875	147.750	295.500	443.250	838.000	888.000
97		74.125	148.250	296.500	444.750	838.500	888.500
	98	74.375	148.750	297.500	446.250	839.000	889.000
99		74.625	149.250	298.500	447.750	839.500	889.500
	100	74.875	149.750	299.500	449.250	840.000	890.000
101		75.125	150.250	300.500	450.750	840.500	890.500
	102	75.375	150.750	301.500	452.250	841.000	891.000
103		75.625	151.250	302.500	453.750	841.500	891.500
	104	75.875	151.750	303.500	455.250	842.000	892.000
105		76.125	152.250	304.500	456.750	842.500	892.500
	106	76.375	152.750	305.500	458.250	843.000	893.000
107		76.625	153.250	306.500	459.750	843.500	893.500
	108	76.875	153.750	307.500	461.250	844.000	894.0

RF channel No.		A-band (50–100 mc)	B-band (100–225 mc)	C-band (225–400 mc)	D-band (400–600 mc)	F-band	
Odd	Even					Low (790–915 mc)	High (840–965 mc)
109		77.125	154.250	308.500	462.750	844.500	894.500
	110	77.375	154.750	309.500	464.250	845.000	895.000
111		77.625	155.250	310.500	465.750	845.500	895.500
	112	77.875	155.750	311.500	467.250	846.000	896.000
113		78.125	156.250	312.500	468.750	846.500	896.500
	114	78.375	156.750	313.500	470.250	847.000	897.000
115		78.625	157.250	314.500	471.750	847.500	897.500
	116	78.875	157.750	315.500	473.250	848.000	898.000
117		79.125	158.250	316.500	474.750	848.500	898.500
	118	79.375	158.750	317.500	476.250	849.000	899.000
119		79.625	159.250	318.500	477.750	849.500	899.500
	120	79.875	159.750	319.500	479.250	850.000	900.000
121		80.125	160.250	320.500	480.750	850.500	900.500
	122	80.375	160.750	321.500	482.250	851.000	901.000
123		80.625	161.250	322.500	483.750	851.500	901.500
	124	80.875	161.750	323.500	485.250	852.000	902.000
125		81.125	162.250	324.500	486.750	852.500	902.500
	126	81.375	162.750	325.500	488.250	853.000	903.000
127		81.625	163.250	326.500	489.750	853.500	903.500
	128	81.875	163.750	327.500	491.250	854.000	904.000
129		82.125	164.250	328.500	492.750	854.500	904.500
	130	82.375	164.750	329.500	494.250	855.000	905.000
131		82.625	165.250	330.500	495.750	855.500	905.500
	132	82.875	165.750	331.500	497.250	856.000	906.000
133		83.125	166.250	332.500	498.750	856.500	906.500
	134	83.375	166.750	333.500	500.250	857.000	907.000
135		83.625	167.250	334.500	501.750	857.500	907.500
	136	83.875	167.750	335.500	503.250	858.000	908.000
137		84.125	168.250	336.500	504.750	858.500	908.500
	138	84.375	168.750	337.500	506.250	859.000	909.000
139		84.625	169.250	338.500	507.750	859.500	909.500
	140	84.875	169.750	339.500	509.250	860.000	910.000
141		85.125	170.250	340.500	510.750	860.500	910.500
	142	85.375	170.750	341.500	512.250	861.000	911.000
143		85.625	171.250	342.500	513.750	861.500	911.500
	144	85.875	171.750	343.500	515.250	862.000	912.000
145		86.125	172.250	344.500	516.750	862.500	912.500
	146	86.375	172.750	345.500	518.250	863.000	913.000
147		86.625	173.250	346.500	519.750	863.500	913.500
	148	86.875	173.750	347.500	521.250	864.000	914.000
149		87.125	174.250	348.500	522.750	864.500	914.500
	150	87.375	174.750	349.500	524.250	865.000	915.000
151		87.625	175.250	350.500	525.750	865.500	915.500
	152	87.875	175.750	351.500	527.250	866.000	916.000
153		88.125	176.250	352.500	528.750	866.500	916.500
	154	88.375	176.750	353.500	530.250	867.000	917.000
155		88.625	177.250	354.500	531.750	867.500	917.500
	156	88.875	177.750	355.500	533.250	868.000	918.000
157		89.125	178.250	356.500	534.750	868.500	918.500
	158	89.375	178.750	357.500	536.250	869.000	919.000
159		89.625	179.250	358.500	537.750	869.500	919.500
	160	89.875	179.750	359.500	539.250	870.000	920.000
161		90.125	180.250	360.500	540.750	870.500	920.500
	162	90.375	180.750	361.500	542.250	871.000	921.000

RF channel No.		A-band (50–100 mc)	B-band (100–225 mc)	C-band (225–400 mc)	D-band (400–600 mc)	F-band	
Odd	Even					Low (790–915 mc)	High (840–965 mc)
163		90.625	181.250	362.500	543.750	871.500	921.500
	164	90.875	181.750	363.500	545.250	872.000	922.000
165		91.125	182.250	364.500	546.750	872.500	922.500
	166	91.375	182.750	365.500	548.250	873.000	923.000
167		91.625	183.250	366.500	549.750	873.500	923.500
	168	91.875	183.750	367.500	551.250	874.000	924.000
169		92.125	184.250	368.500	552.750	874.500	924.500
	170	92.375	184.750	369.500	554.250	875.000	925.000
171		92.625	185.250	370.500	555.750	875.500	925.500
	172	92.875	185.750	371.500	557.250	876.000	926.000
173		93.125	186.250	372.500	558.750	876.500	926.500
	174	93.375	186.750	373.500	560.250	877.000	927.000
175		93.625	187.250	374.500	561.750	877.500	927.500
	476	93.875	187.750	375.500	563.250	878.000	928.000
177		94.125	188.250	376.500	564.750	878.500	928.500
	178	94.375	188.750	377.500	566.250	879.000	929.000
179		94.625	189.250	378.500	567.750	879.500	929.500
	180	94.875	189.750	379.500	569.250	880.000	930.000
181		95.125	190.250	380.500	570.750	880.500	930.500
	182	95.375	190.750	381.500	572.250	881.000	931.000
183		95.625	191.250	382.500	573.750	881.500	931.500
	184	95.875	191.750	383.500	575.250	882.000	932.000
185		96.125	192.250	384.500	576.750	882.500	932.500
	186	96.375	192.750	385.500	578.250	883.000	933.000
187		96.625	193.250	386.500	579.750	883.500	933.500
	188	96.875	193.750	387.500	581.250	884.000	934.000
189		97.125	194.250	388.500	582.750	884.500	934.500
	190	97.375	194.750	389.500	584.250	885.000	935.000
191		97.625	195.250	390.500	585.750	885.500	935.500
	192	97.875	195.750	391.500	587.250	886.000	936.000
193		98.125	196.250	392.500	588.750	886.500	936.500
	194	98.375	196.750	393.500	590.250	887.000	937.000
195		98.625	197.250	394.500	591.750	887.500	937.500
	196	98.875	197.750	395.500	593.250	888.000	938.000
197		99.125	198.250	396.500	594.750	888.500	938.500
	198	99.375	198.750	397.500	596.250	889.000	939.000
199		99.625	199.250	398.500	597.750	889.500	939.500
	200	99.875	199.750	399.500	599.250	890.000	940.000
201			200.250			890.500	940.500
	202		200.750			891.000	941.000
203			201.250			891.500	941.500
	204		201.750			892.000	942.000
205			202.250			892.500	942.500
	206		202.750			893.000	943.000
207			203.250			893.500	943.500
	208		203.750			894.000	944.000
209			204.250			894.500	944.500
	210		204.750			895.000	945.000
211			205.250			895.500	945.500
	212		205.750			896.000	946.000
213			206.250			896.500	946.500
	214		206.750			897.000	947.000
215			207.250			897.500	947.500
	216		207.750			898.000	948.000

RF channel No.		A-band (50–100 mc)	B-band (100–225 mc)	C-band (225–400 mc)	D-band (400–600 mc)	F-band	
Odd	Even					Low (790–915 mc)	High (840–965 mc)
217			208. 250			898. 500	948. 500
	218		208. 750			899. 000	949. 000
219			209. 250			899. 500	949. 500
	220		209. 750			900. 000	950. 000
221			210. 250			900. 500	950. 500
	222		210. 750			901. 000	951. 000
223			211. 250			901. 500	951. 500
	224		211. 750			902. 000	952. 000
225			212. 250			902. 500	952. 500
	226		212. 750			903. 000	953. 000
227			213. 250			903. 500	953. 500
	228		213. 750			904. 000	954. 000
229			214. 250			904. 500	954. 500
	230		214. 750			905. 000	955. 000
231			215. 250			905. 500	955. 500
	232		215. 750			906. 000	956. 000
233			216. 250			906. 500	956. 500
	234		216. 750			907. 000	957. 000
235			217. 250			907. 500	957. 500
	236		217. 750			908. 000	958. 000
237			218. 250			908. 500	958. 500
	238		218. 750			909. 000	959. 000
239			219. 250			909. 500	959. 500
	240		219. 750			910. 000	960. 000
241			220. 250			910. 500	960. 500
	242		220. 750			911. 000	961. 000
243			221. 250			911. 500	961. 500
	244		221. 750			912. 000	962. 000
245			222. 250			912. 500	962. 500
	246		222. 750			913. 000	963. 000
247			223. 250			913. 500	963. 500
	248		223. 750			914. 000	964. 000
249			224. 250			914. 500	964. 500
	250		224. 750			915. 000	965. 000

d. Radiofrequency Channel Number Frequency Assignment for T–302(*)/TRC and R–417(*)/TRC (J-Band).

RF channel No.		Low (1,350–1,525 mcs)		Med (1,525–1,700 mcs)		High (1,700–1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
1		1350. 438	1400. 563	1525. 439	1575. 564	1700. 437	1750. 562
	2	1350. 688	1401. 063	1525. 689	1576. 064	1700. 687	1751. 062
3		1350. 938	1401. 563	1525. 939	1576. 564	1700. 937	1751. 562
	4	1351. 188	1402. 063	1526. 189	1577. 064	1701. 187	1752. 062
5		1351. 438	1402. 563	1526. 439	1577. 564	1701. 437	1752. 562
	6	1351. 688	1403. 063	1526. 689	1578. 064	1701. 687	1753. 062
7		1351. 938	1403. 563	1526. 939	1578. 564	1701. 937	1753. 562
	8	1352. 188	1404. 063	1527. 189	1579. 064	1702. 187	1754. 062
9		1352. 438	1404. 563	1527. 439	1579. 564	1702. 437	1754. 562
	10	1352. 688	1405. 063	1527. 689	1580. 064	1702. 687	1755. 062

RF channel No.		Low (1,350-1,525 mcs)		Med (1,525-1,700 mcs)		High (1,700-1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
		1352.938	1405.563	1527.939	1580.564	1702.937	1755.562
11	12	1353.188	1406.063	1528.189	1581.064	1703.187	1756.062
13		1353.438	1406.563	1528.439	1581.564	1703.437	1756.562
	14	1353.688	1407.063	1528.689	1582.064	1703.687	1757.062
15		1353.938	1407.563	1528.939	1582.564	1703.937	1757.562
	16	1354.188	1408.063	1529.189	1583.064	1704.187	1758.062
17		1354.438	1408.563	1529.439	1583.564	1704.437	1758.562
	18	1354.688	1409.063	1529.689	1584.064	1704.687	1759.062
19		1354.938	1409.563	1529.939	1584.564	1704.937	1759.562
	20	1355.188	1410.063	1530.189	1585.064	1705.187	1760.062
21		1355.438	1410.563	1530.439	1585.564	1705.437	1760.562
	22	1355.688	1411.063	1530.689	1586.064	1705.687	1761.062
23		1355.938	1411.563	1530.939	1586.564	1705.937	1761.562
	24	1356.188	1412.063	1531.189	1587.064	1706.187	1762.062
25		1356.438	1412.563	1531.439	1587.564	1706.437	1762.562
	26	1356.688	1413.063	1531.689	1588.064	1706.687	1763.062
27		1356.938	1413.563	1531.939	1588.564	1706.937	1763.562
	28	1357.188	1414.063	1532.189	1589.064	1707.187	1764.062
29		1357.438	1414.563	1532.439	1589.564	1707.437	1764.562
	30	1357.688	1415.063	1532.689	1590.064	1707.687	1765.062
31		1357.938	1415.563	1532.939	1590.564	1707.937	1765.562
	32	1358.188	1416.063	1533.189	1591.064	1708.187	1766.062
33		1358.438	1416.563	1533.439	1591.564	1708.437	1766.562
	34	1358.688	1417.063	1533.689	1592.064	1708.687	1767.062
35		1358.938	1417.563	1533.939	1592.564	1708.937	1767.562
	36	1359.188	1418.063	1534.189	1593.064	1709.187	1768.062
37		1359.438	1418.563	1534.439	1593.564	1709.437	1768.562
	38	1359.688	1419.063	1534.689	1594.064	1709.687	1769.062
39		1359.938	1419.563	1534.939	1594.564	1709.937	1769.562
	40	1360.188	1420.063	1535.189	1595.064	1710.187	1770.062
41		1360.438	1420.563	1535.439	1595.564	1710.437	1770.562
	42	1360.688	1421.063	1535.689	1596.064	1710.687	1771.062
43		1360.938	1421.563	1535.939	1596.564	1710.937	1771.562
	44	1361.188	1422.063	1536.189	1597.064	1711.187	1772.062
45		1361.438	1422.563	1536.439	1597.564	1711.437	1772.562
	46	1361.688	1423.063	1536.698	1598.064	1711.687	1773.062
47		1361.938	1423.563	1536.939	1598.564	1711.937	1773.562
	48	1362.188	1424.063	1537.189	1599.064	1712.187	1774.062
49		1362.438	1424.563	1537.439	1599.564	1712.437	1774.562
	50	1362.688	1425.063	1537.689	1600.064	1712.687	1775.062
51		1362.938	1425.563	1537.939	1600.564	1712.937	1775.562
	52	1363.188	1426.063	1538.189	1601.064	1713.187	1776.062
53		1363.438	1426.563	1538.439	1601.564	1713.437	1776.562
	54	1363.688	1427.063	1538.689	1602.064	1713.687	1777.062
55		1363.938	1427.563	1538.939	1602.564	1713.937	1777.562
	56	1364.188	1428.063	1539.189	1603.064	1714.187	1778.062
57		1364.438	1428.563	1539.439	1603.564	1714.437	1778.562
	58	1364.688	1429.063	1539.689	1604.064	1714.687	1779.062
59		1364.938	1429.563	1539.939	1604.564	1714.937	1779.562
	60	1365.188	1430.063	1540.189	1605.064	1715.187	1780.062
61		1365.438	1430.563	1540.439	1605.654	1715.437	1780.562
	62	1365.688	1431.063	1540.689	1606.064	1715.687	1781.062
63		1365.938	1431.563	1540.939	1606.564	1715.937	1781.562
	64	1366.188	1432.063	1541.189	1607.064	1716.187	1782.062
65		1366.438	1432.563	1541.439	1607.564	1716.437	1782.562
	66	1366.688	1433.063	1541.689	1608.064	1716.687	1783.062

RF channel No.		Low (1,350–1,525 mcs)		Med (1,525–1,700 mcs)		High (1,700–1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
67		1366.938	1433.563	1541.939	1608.564	1716.937	1783.562
	68	1367.188	1434.063	1542.189	1609.064	1717.187	1784.062
69		1367.438	1434.563	1542.439	1609.564	1717.437	1784.562
	70	1367.688	1435.063	1542.689	1610.064	1717.687	1785.062
71		1367.938	1435.563	1542.939	1610.564	1717.937	1785.562
	72	1368.188	1436.063	1543.189	1611.064	1718.187	1786.062
73		1368.438	1436.563	1543.439	1611.564	1718.437	1786.562
	74	1368.688	1437.063	1543.689	1612.064	1718.687	1787.062
75		1368.938	1437.563	1543.939	1612.564	1718.937	1787.562
	76	1369.188	1438.063	1544.189	1613.064	1719.187	1788.062
77		1369.438	1438.563	1544.439	1613.564	1719.437	1788.562
	78	1369.688	1439.063	1544.689	1614.064	1719.687	1789.062
79		1369.938	1439.563	1544.939	1614.564	1719.937	1789.562
	80	1370.188	1440.063	1545.189	1615.064	1720.187	1790.062
81		1370.438	1440.563	1545.439	1615.564	1720.437	1790.562
	82	1370.688	1441.063	1545.689	1616.064	1720.687	1791.062
83		1370.938	1441.563	1545.939	1616.564	1720.937	1791.562
	84	1371.188	1442.063	1546.189	1617.064	1721.187	1792.062
85		1371.438	1442.563	1546.439	1617.564	1721.437	1792.562
	86	1371.688	1443.063	1546.689	1618.064	1721.687	1793.062
87		1371.938	1443.563	1546.939	1618.564	1721.937	1793.562
	88	1372.188	1444.063	1547.189	1619.064	1722.187	1794.062
89		1372.438	1444.563	1547.439	1619.564	1722.437	1794.562
	90	1372.688	1445.063	1547.689	1620.064	1722.687	1795.062
91		1372.938	1445.563	1547.939	1620.564	1722.937	1795.562
	92	1373.188	1446.063	1548.189	1621.064	1723.187	1796.062
93		1373.438	1446.563	1548.439	1621.564	1723.437	1796.562
	94	1373.688	1447.063	1548.689	1622.064	1723.687	1797.062
95		1373.938	1447.563	1548.939	1622.564	1723.937	1797.562
	96	1374.188	1448.063	1549.189	1623.064	1724.187	1798.062
97		1374.438	1448.563	1549.439	1623.564	1724.437	1798.562
	98	1374.688	1449.063	1549.639	1624.064	1724.687	1799.062
99		1374.938	1449.563	1549.939	1624.564	1724.937	1799.562
	100	1375.188	1450.063	1550.189	1625.064	1725.187	1800.062
101		1375.438	1450.563	1550.439	1625.564	1725.437	1800.562
	102	1375.688	1451.063	1550.689	1626.064	1725.687	1801.062
103		1375.938	1451.563	1550.939	1626.564	1725.937	1801.562
	104	1376.188	1452.063	1551.189	1627.064	1726.187	1802.062
105		1376.438	1452.563	1551.439	1627.564	1726.437	1802.562
	106	1376.688	1453.063	1551.689	1628.064	1726.687	1803.062
107		1376.938	1453.563	1551.939	1628.564	1726.937	1803.562
	108	1377.188	1454.063	1552.189	1629.064	1727.187	1804.062
109		1377.438	1454.563	1552.439	1629.564	1727.437	1804.562
	110	1377.688	1455.063	1552.689	1630.064	1727.687	1805.062
111		1377.938	1455.563	1552.939	1630.564	1727.937	1805.562
	112	1378.188	1456.063	1553.189	1631.064	1728.187	1806.062
113		1378.438	1456.563	1553.439	1631.564	1728.437	1806.562
	114	1378.688	1457.063	1553.689	1632.064	1728.687	1807.062
115		1378.938	1457.563	1553.939	1632.564	1728.937	1807.562
	116	1379.188	1458.063	1554.189	1633.064	1729.187	1808.062
117		1379.438	1458.563	1554.439	1633.564	1729.437	1808.562
	118	1379.688	1459.063	1554.689	1634.064	1729.687	1809.062
119		1379.938	1459.563	1554.939	1634.564	1729.937	1809.562
	120	1380.188	1460.063	1555.189	1635.064	1730.187	1810.062
121		1380.438	1460.563	1555.439	1635.564	1730.437	1810.562
	122	1380.688	1461.063	1555.689	1636.064	1730.687	1811.062

RF channel No.		Low (1,350–1,525 mcs)		Med (1,525–1,700 mcs)		High (1,700–1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
123		1380.938	1461.563	1555.939	1636.564	1730.987	1811.562
	124	1381.188	1462.063	1556.189	1637.064	1731.187	1812.062
125		1381.438	1462.563	1556.439	1637.564	1731.437	1812.562
	126	1381.688	1463.063	1556.689	1638.064	1731.687	1813.062
127		1381.938	1463.563	1556.939	1638.564	1731.937	1813.562
	128	1382.188	1464.063	1557.189	1639.064	1732.187	1814.062
129		1382.438	1464.563	1557.439	1639.564	1732.437	1814.562
	130	1382.688	1465.063	1557.689	1640.064	1732.687	1815.062
131		1382.938	1465.563	1557.939	1640.564	1732.937	1815.562
	132	1383.188	1466.063	1558.189	1641.064	1733.187	1816.062
133		1383.438	1466.563	1558.439	1641.564	1733.437	1816.562
	134	1383.688	1467.063	1558.689	1642.064	1733.687	1817.062
135		1383.938	1467.563	1558.939	1642.564	1733.937	1817.562
	136	1384.188	1468.063	1559.189	1643.064	1734.187	1818.062
137		1384.438	1468.563	1559.439	1643.564	1734.437	1818.562
	138	1384.688	1469.063	1559.689	1644.064	1734.687	1819.062
139		1384.938	1469.563	1559.939	1644.564	1734.937	1819.562
	140	1385.188	1470.063	1560.189	1645.064	1735.187	1820.062
141		1385.438	1470.563	1560.439	1645.564	1735.437	1820.562
	142	1385.688	1471.063	1560.689	1646.064	1735.687	1821.062
143		1385.938	1471.563	1560.939	1646.564	1735.937	1821.562
	144	1386.188	1472.063	1561.189	1647.064	1736.187	1822.062
145		1386.438	1472.563	1561.439	1647.564	1736.437	1822.562
	146	1386.688	1473.063	1561.689	1648.064	1736.687	1823.062
147		1386.938	1473.563	1561.939	1648.564	1736.937	1823.652
	148	1387.188	1474.063	1562.189	1649.064	1737.187	1824.062
149		1387.438	1474.563	1562.439	1649.564	1737.437	1824.652
	150	1387.688	1475.063	1562.689	1650.064	1737.687	1825.062
151		1387.938	1475.563	1562.939	1650.564	1737.937	1825.562
	152	1388.188	1476.063	1563.189	1651.064	1738.187	1826.062
153		1388.438	1476.563	1563.439	1651.564	1738.437	1826.562
	154	1388.688	1477.063	1563.689	1652.064	1708.687	1827.062
155		1388.938	1477.563	1563.939	1652.564	1738.937	1827.562
	156	1389.188	1478.063	1564.189	1653.064	1739.187	1828.062
157		1389.438	1478.563	1564.439	1653.564	1739.437	1828.562
	158	1389.688	1479.063	1564.689	1654.064	1739.687	1829.062
159		1389.938	1479.563	1564.939	1654.564	1739.937	1829.562
	160	1390.188	1480.063	1565.189	1655.064	1740.187	1830.062
161		1390.438	1480.563	1565.439	1655.564	1740.437	1830.562
	162	1390.688	1481.063	1565.689	1656.064	1740.687	1831.062
163		1390.938	1481.563	1565.939	1656.564	1740.937	1831.562
	164	1391.188	1482.063	1566.189	1657.064	1741.187	1832.062
165		1391.438	1482.563	1566.439	1657.564	1741.437	1832.562
	166	1391.688	1483.063	1566.689	1658.064	1741.687	1833.062
167		1391.938	1483.563	1566.939	1658.564	1741.937	1833.562
	168	1392.188	1484.063	1567.189	1659.064	1742.187	1834.062
169		1392.438	1484.563	1567.439	1659.564	1742.437	1834.562
	170	1392.688	1485.063	1567.689	1660.064	1742.687	1835.062
171		1392.938	1485.563	1567.939	1660.564	1742.937	1835.562
	172	1393.188	1486.063	1568.189	1661.064	1743.187	1836.062
173		1393.438	1486.563	1568.439	1661.564	1743.437	1836.562
	174	1393.688	1487.063	1568.689	1662.064	1743.687	1837.062
175		1393.938	1487.563	1568.939	1662.564	1743.937	1837.562
	176	1394.188	1488.063	1569.189	1663.064	1744.187	1838.062
177		1394.438	1488.563	1569.439	1663.564	1744.437	1838.562
	178	1394.688	1489.063	1569.689	1664.064	1744.687	1839.062

RF channel No.		Low (1,350–1,525 mcs)		Med (1,525–1,700 mcs)		High (1,700–1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
179		1394.938	1489.563	1569.939	1664.564	1744.937	1839.562
	180	1395.188	1490.063	1570.189	1665.064	1745.187	1840.062
181		1395.438	1490.563	1570.439	1665.564	1745.437	1840.562
	182	1395.688	1491.063	1570.689	1666.064	1745.687	1841.062
183		1395.938	1491.563	1570.939	1666.564	1745.937	1841.562
	184	1396.188	1492.063	1571.189	1667.064	1746.187	1842.062
185		1396.438	1492.563	1571.439	1667.564	1746.437	1842.562
	186	1396.688	1493.063	1571.689	1668.064	1746.687	1843.062
187		1396.938	1493.563	1571.939	1668.564	1746.937	1843.562
	188	1397.188	1494.063	1572.189	1669.064	1747.187	1844.062
189		1397.438	1494.563	1572.439	1669.564	1747.437	1844.562
	190	1397.688	1495.063	1572.689	1670.064	1747.687	1845.062
191		1397.938	1495.563	1572.939	1670.564	1747.937	1845.562
	192	1398.188	1496.063	1573.189	1671.064	1748.187	1846.062
193		1398.438	1496.563	1573.439	1671.564	1748.437	1846.562
	194	1398.688	1497.063	1573.689	1672.064	1748.687	1847.062
195		1398.938	1497.563	1573.939	1672.564	1748.937	1847.562
	196	1399.188	1498.063	1574.189	1673.064	1749.187	1848.062
197		1399.438	1498.563	1574.439	1673.564	1749.437	1848.562
	198	1399.688	1499.063	1574.689	1674.064	1749.687	1849.062
199		1399.938	1499.563	1574.939	1674.564	1749.937	1349.562
	200	1400.188	1500.063	1575.189	1675.064	1750.187	1850.062
201			1500.563		1675.564		1850.562
	202		1501.063		1676.064		1851.062
203			1501.563		1676.564		1851.562
	204		1502.063		1677.064		1852.062
205			1502.563		1677.564		1852.562
	206		1503.063		1678.064		1853.062
207			1503.563		1678.564		1853.562
	208		1504.063		1679.064		1854.062
209			1504.563		1679.564		1854.562
	210		1505.063		1680.064		1855.062
211			1505.563		1680.564		1855.562
	212		1506.063		1681.064		1856.062
213			1506.563		1681.564		1856.562
	214		1507.063		1682.064		1857.062
215			1507.563		1682.564		1857.562
	216		1508.063		1683.064		1858.062
217			1508.563		1683.564		1858.562
	218		1509.063		1684.064		1859.062
219			1509.563		1684.564		1859.562
	220		1510.063		1685.064		1860.062
221			1510.563		1685.564		1860.562
	222		1511.063		1686.064		1861.062
223			1511.563		1686.564		1861.562
	224		1512.063		1687.064		1862.062
225			1512.563		1687.564		1862.562
	226		1513.063		1688.064		1863.062
227			1513.563		1688.564		1863.562
	228		1514.063		1689.064		1864.062
229			1514.563		1689.564		1864.562
	230		1515.063		1690.064		1865.062
231			1515.563		1690.564		1865.562
	232		1516.063		1691.064		1866.062
233			1516.563		1691.564		1866.562
	234		1517.063		1692.064		1867.062

RF channel No.		Low (1,350–1,525 mcs)		Med (1,525–1,700 mcs)		High (1,700–1,875 mcs)	
Odd	Even	Scale A	Scale B	Scale A	Scale B	Scale A	Scale B
235			1517. 563		1692. 564		1867. 562
	236		1518. 063		1693. 064		1868. 062
237			1518. 563		1693. 564		1868. 562
	238		1519. 063		1694. 064		1869. 062
239			1519. 563		1694. 564		1869. 562
	240		1520. 063		1695. 064		1870. 062
241			1520. 563		1695. 564		1870. 562
	242		1521. 063		1696. 064		1871. 062
243			1521. 563		1696. 564		1871. 562
	244		1522. 063		1697. 064		1872. 062
245			1522. 563		1697. 564		1872. 562
	246		1523. 063		1698. 064		1873. 062
247			1523. 563		1698. 564		1873. 562
	248		1524. 063		1699. 064		1874. 062
249			1524. 563		1699. 564		1874. 562
	250		1525. 063		1700. 064		1875. 062

e. Limitations of RF Channel Number Frequency Assignments (F-band). When the F-band transmitter head is used with the T–302 (*)/TRC and the F-band receiver tuning head is used with the R–417(*)/TRC, the R–417(*)/TRC at the T–302(*)/TRC site will receive interference from the T–302(*)/TRC in some instances. This interference will be produced only if the T–302(*)/TRC and the R–417(*)/TRC are tuned to certain RF channel numbers. Consideration must be given to this factor when RF channel numbers or frequency allocations are assigned. The charts below indicate the RF channel numbers of the T–302(*)/TRC that will produce interference in the R–417(*)/TRC and also indicate RF channel numbers of the R–417(*)/TRC that will receive the interference. The chart in (1) below lists the RF channel numbers for the F-band (*low*) and the chart in (2) below lists the RF channel numbers for the F-band (*high*). Interference will also occur when the R–417(*)/TRC and the T–302(*)/TRC are operated on even adjacent RF channel numbers.

Note. The RF channel numbers listed in the *Weak* column for the T–302(*)/TRC will produce interference of 6 microvolts or less in the R–147(*)/TRC.

(*1*) *F-band (low).*

T–302(*)/TRC RF channel number producing interference		R–417(*)/TRC RF channel number receiving interference	T–302(*)/TRC RF channel number producing interference		R–417(*)/TRC RF channel number receiving interference
Weak	Strong		Weak	Strong	
	1, 193, 195	1		27, 185	27
	3, 193, 195	3	1–249	29, 185, 203	[1] 29
65	5, 193, 197	5	1–249	31, 183, 203	[1] 31
65	7, 191, 197	7	69	33, 183, 203	33
65	9, 191, 197	9		35, 183	35
	11, 191	11		37, 181, 205	37
	13, 189, 199	13		39, 181, 205	39
	15, 189, 199	15	71	41, 181, 205	41
67	17, 189, 199	17	71	43, 179	43
67	19, 187	19	71	45, 179, 207	45
67	21, 187, 201	21		47, 179, 207	47
	23, 187, 201	23		49, 177, 207	49
	25, 185, 201	25		51, 177	51

See footnotes at end of table.

T-302(*)/TRC RF channel number producing interference		R-417(*)/TRC RF channel number receiving interference
Weak	Strong	
73	53, 177, 209	53
73	55, 175, 209	55
73	57, 175, 209	57
	59, 175	59
	61, 173, 211	61
	63, 173, 211	63
75	65, 173, 211	65
75	67, 171	67
75	69, 171, 213	69
	71, 171, 213	71
	73, 169, 213	73
	75, 169	75
77	79, 169, 215	77
77	79, 167, 215	79
77	81, 167, 215	81
	83, 167	83
	85, 165, 217	85
	87, 165, 217	87
79	89, 165, 217	89
79	91, 168	91
79	93, 163, 219	93
	95, 163, 219	95
	97, 161, 219	97
	99, 161	99
81	101, 161, 221	101
81	103, 159, 221	103
81	105, 159, 221	105
1-249	107, 159	[2] 107
	109, 157, 223	109
	111, 157, 223	111
83	113, 157, 223	113
83	115, 155	115
83	117, 155, 225	117
	119, 155, 225	119
	121, 153, 225	121
	123, 153	123
85	125, 153, 227	125
85	127, 151, 227	127
85	129, 151, 227	129
	131, 151	131
	133, 149, 229	133
	135, 149, 229	135
87	137, 149, 229	137
87	139, 147	139
87	141, 147, 231	141
	143, 147, 231	143
	145, 231	145
	145, 147	147
89	145, 149, 233	149
89	143, 151, 233	151
89	143, 153, 233	153
	143, 155	155
	141, 157, 235	157
	141, 159, 235	159
91	141, 161, 235	161
91	139, 163	163
91	139, 165, 237	165
	139, 167, 237	167
	137, 169, 237	169
	137, 171	171
93	137, 173, 239	173
93	135, 175, 239	175
93	135, 177, 239	177
	135, 179	179
	133, 181, 241	181
	133, 183, 241	183
95	133, 185, 241	185
95	131, 187	187
95	131, 189, 243	189
	131, 191, 243	191
	129, 193, 243	193
	129, 195	195
97	129, 197, 245	197
97	127, 199, 245	199
1, 97	127, 201, 245	201
97	127, 203	203
3	125, 205, 247	205
	125, 207, 247	207
5, 99	125, 209, 247	209
99	123, 211	211
7, 99	123, 213, 249	213
	123, 215, 249	215
9	121, 217, 249	217
	121, 219	219
11, 101	121, 221	221
101	119, 223	223
13, 101	119, 225	225
	119, 227	227
15	117, 229	229
	117, 231	231
17, 103	117, 233	233
103	115, 235	235
19, 103	115, 237	237
	115, 239	239
21	113, 211	241
	113, 243	243
23, 105	113, 245	245
105	111, 247	247
25, 105	111, 249	249

[1] Do not use RF channel numbers 29 or 31 on T-302(*)/TRC or R-417(*)/TRC.

[2] Use RF channel number 107 on R-417(*)/TRC only for short distances, RF channel number 107 (low) band may be used on T-302(*)/TRC with RF channel number 7 (high) band on R-417(*)/TRC.

(2) *F-band (high).*

T-302(*)/TRC RF channel number producing interference		R-417(*)/TRC RF channel number receiving interference	T-302(*)/TRC RF channel number producing interference		R-417(*)/TRC RF channel number receiving interference
Weak	Strong		Weak	Strong	
13, 81	1, 221, 227	1	99	93, 109, 191, 247	109
13, 81	3, 221, 227	3	99	93, 111, 191	111
13, 81	5, 119, 221, 225	5	99	93, 113, 189, 249	113
13	7, 119, 225	7		115, 189, 249	115
13	9, 119, 223, 225	9		91, 117, 189, 249	117
13	11, 223	11		91, 119, 187	119
11, 83	13, 117, 223	13		91, 121, 187	121
11, 83	15, 117, 223	15	101	123, 187	123
11, 83	17, 117, 223, 225	17	101	89, 125, 185	125
11	19, 221, 225	19		89, 127, 185	127
11	21, 115, 221, 225	21	1–249	89, 129, 185	[2] 129
11	23, 115, 219	23		131, 183	131
9, 85	25, 115, 219, 227	25	103	87, 133, 183	133
9, 85	27, 219, 227	27	103	87, 135, 183	135
9, 85	29, 113, 217, 227	29	103	87, 137, 181	137
9	31, 113, 217	31		139, 181	139
9	33, 113, 217, 229	33		85, 141, 181	141
9	35, 215, 229	35		85, 143, 179	143
7, 87	37, 111, 215, 229	37	105	85, 145, 179	145
7, 87	39, 111, 215	39	105	147, 179	147
7, 87	41, 111, 213, 231	41	105	83, 149, 177	149
7	43, 213, 231	43		83, 151, 177	151
7	45, 109, 213, 231	45		83, 153, 177	153
1–249	47, 209, 221	[1] 47		155, 175	155
1–249	49, 109, 211, 233	[1] 49	107	81, 157, 175	157
5, 89	51, 211, 233	51	107	81, 159, 175	159
5, 89	53, 107, 209, 233	53	107	81, 161, 173	161
5	55, 107, 209	55		163, 173	163
5	57, 107, 209, 235	57		79, 165, 173	165
5	59, 207, 235	59		79, 167, 171	167
3, 91	61, 105, 207, 235	61	109	79, 169, 171	169
3, 91	63, 105, 207	63	109	171	171
3, 91	65, 105, 205, 237	65	109	77, 169, 173	173
3	67, 205, 237	67		77, 169, 175	175
3	69, 103, 205, 237	69		77, 169, 177	177
3	71, 103, 203	71		167, 179	179
1, 93	73, 103, 203, 239	73	111	75, 167, 181	181
1, 93	75, 203, 239	75	111	75, 167, 183	183
1, 93	79, 101, 201, 239	77	111	75, 165, 185	185
1	79, 101, 201	79		165, 187	187
	81, 101, 201, 241	81		73, 165, 189	189
	83, 199, 241	83		73, 163, 191	191
95	85, 99, 199, 241	85	113	73, 163, 193	193
95	87, 99, 199	87	113	163, 195	195
95	89, 99, 197, 243	89	113	71, 161, 197	197
	91, 197, 243	91		71, 161, 199	199
	93, 97, 197, 243	93	1	71, 161, 201	201
	95, 97, 195	95		159, 103	203
97	97, 195, 245	97	3, 115	69, 159, 205	205
97	99, 195, 245	99	115	69, 159, 207	207
97	95, 101, 193, 245	101	5, 115	69, 157, 209	209
	95, 103, 193	103		157, 211	211
	95, 105, 193, 247	105	7	67, 157, 213	213
	107, 191, 247	107		67, 155, 215	215

See footnotes at end of table.

T-302(*)/TRC RF channel number producing interference		R-417(*)/TRC RF channel number receiving interference
Weak	Strong	
9, 117	67, 155, 217	217
117	155, 219	219
11, 117	65, 153, 221	221
	65, 153, 223	223
13	65, 153, 225	225
	151, 227	227
15, 119	63, 151, 229	229
119	63, 151, 231	231
17, 119	63, 149, 233	233
	149, 235	235
19	61, 149, 237	237
	61, 147, 239	239
21, 121	61, 147, 241	241
121	147, 243	243
23, 121	51, 145, 245	245
	59, 145, 247	247
25	145, 249	249

[1] Do not use RF channel number 47 or 49 on T-302(*)/TRC or R-417(*)/TRC.

[2] Use RF channel number 129 on R-417(*)/TRC only for short distances, RF channel number 129 (high) band may be used on T-302(*)/TRC with RF channel number 229 (low) band on R-417(*)/TRC.

f. Limitations of RF Channel Number Frequency Assignments (J-Band). When the J-band transmitter tuning head is used with the T-302(*)/TRC and the J-band receiver tuning head is used with the R-417(*)/TRC, the R-417(*)/TRC at the T-302(*)/TRC site will receive interference from the T-302(*)/TRC in some instances. This interference will occur only when the T-302(*)/TRC and the R-417(*)/TRC are tuned to certain RF channel numbers. Consideration must be given to this interference factor when RF channel numbers or frequency allocations are assigned. The charts below indicate the RF channel numbers of the R-417(*)/TRC that will receive interference and the RF channel numbers of the T-302(*)/TRC that will produce the interference. Interference will also occur when the R-417(*)/TRC and the T-302(*)/TRC are operated on adjacent RF channels. The channels on which such interference occurs are indicated in the following charts. The chart in (1) below lists the RF channel numbers for the J-band (low); the chart in (2) below lists the RF channel numbers for the J-band (medium); and the chart in (3) below lists the RF channel numbers for the J-band (high).

(1) *J-band (low).*

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.				R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.			
	Low		Medium			Low		Medium	
LO scale	Scale		Scale		LO scale	Scale		Scale	
A	A	B	A	B	A	A	B	A	B
1	1	21			57	57	49		
5	5	23			61	61	51		
9	9	25			65	65	53		
13	13	27			69	69	55		
17	17	29			73	73	57		
21	21	31			77	77	59		
25	25	33			81	81	61		
29	29	35			85	85	63		
33	33	37			89	89	65		
37	37	39			93	93	67		
41	41	41			97	97	69		
45	45	43			101	101	71		
49	49	45			105	105	73		
53	53	47			109	109	75		

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC rf channel No.			
	Low		Medium	
LO scale	Scale		Scale	
A	A	B	A	B
113	113	77		
117	117	79		
121	121	81		
125	125	83		
129	129	85		
133	133	87		
137	137	89		
141	141	91		
145	145	93		
149	149	95		
153	153	97		
157	157	99		
161	161	101		
165	165	103		
169	169	105		
173	173	107		
177	177	109		
181	181	111		
185	185	113		
189	189	115		
193	193	117		
197	197	119		
B				
1	1	1, 121		
3	3	3, 123		
5	5	5, 125		
7	7	7, 127		
9	9	9, 129		
11	11	11, 131		
13	13	13, 133		
15	15	15, 135		
17	17	17, 137		
19	19	19, 139		
21	21	21, 141		
23	23	23, 143		
25	25	25, 145		
27	27	27, 147		
29	29	29, 149		
31	31	31, 151	All	All
33	33	33, 153		
35	35	35, 155		
37	37	37, 157		
39	39	39, 159		
41	41	41, 161		
43	43	43, 163		
45	45	45, 165		
47	47	47, 167		
49	49	49, 169		
51	51	51, 171		
53	53	53, 173		
55	55	55, 175		
57	57	57, 177		

R-417(*)/TRC RF channel No.	Do not uce T-302(*)/TRC rf channel No.			
	Low		Medium	
LO scale	Scale		Scale	
B	A	B	A	B
59	59	59, 179		
61	61	61, 181		
63	63	63, 183		
65	65	65, 185		
67	67	67, 187		
69	69	69, 189		
71	71	71, 191		
73	73	73, 193		
75	75	75, 195		
77	77	77, 197		
79	79	79, 199		
81	81	81, 201		
83	83	83, 203		
85	85	85. 205		
87	87	87, 207		
89	89	89, 209		
91	91	91, 211	All	All
93	93	93, 213		
95	95	95, 215		
97	97	97, 217		
99	99	99, 219		
101	101, 1	101, 221		
103	103, 2	103, 223		
105	105, 3	105, 225		
107	107, 5	107, 227		
109	109, 6	109, 229		
111	111, 7	111, 231		
113	113, 9	113, 233		
115	115, 10	115, 235		
117	117, 11	117, 237		
119	119, 13	119, 239		
121	121, 14	121, 241		
123	123, 15	123, 243		
125	125, 17	125, 245		
127	127, 18	127, 247		
129	129, 19	129, 249		
131	131, 21	131	1	
133	133, 22	133	5	
135	135, 23	135	9	
137	137, 25	137	13	
139	139, 26	139	17	
141	141, 27	141	21	
143	143, 29	143	25	
145	145, 30	145	29	
147	147, 31	147	33	
149	149, 33	149	37	
151	151, 34	151	All	All
153	153, 35	153	45	
155	155, 37	155	49	
157	157, 38	157	53	
159	159, 39	159	57	
161	161, 41	161	61	

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.			
	Low		Medium	
LO scale	Scale		Scale	
B	A	B	A	B
163	163, 42	163	65	
165	165, 43	165	69	
167	167, 45	167	73	
169	169, 46	169	77	
171	171, 47	171	81	
173	173, 49	173	85	
175	175, 50	175	89	
177	177, 51	177	93	
179	179, 53	179	97	
181	181, 54	181	101	
183	183, 55	193	105	
185	185, 57	185	109	
187	187, 58	187	113	
189	189, 59	189	117	
191	191, 61	191	121	
193	193, 62	193	125	
195	195, 63	195	129	
197	197, 65	197	133	
199	199, 66	199	137	
201	67	201, 1	141	
203	69	203, 2	145	
205	70	205, 3	149	

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.			
	Low		Medium	
LO scale	Scale		Scale	
B	A	B	A	B
207	71	207, 4	153	
209	73	209, 5	157	
211	74	211, 6	All	All
213	75	213, 7	165	
215	77	215, 8	169	
217	78	217, 9	173	
219	79	219, 10	177	
221	81	221, 11	181	
223	82	223, 12	185	
225	83	225, 13	189	
227	85	227, 14	193	
229	86	229, 15	197	
231	87	231, 16	--------	1
233	89	233, 17	--------	3
235	90	235, 18	--------	5
237	91	237, 19	--------	7
239	93	239, 20	--------	9
241	94	241, 21	--------	11
243	95	243, 22	--------	13
245	97	245, 23	--------	15
247	98	247, 24	--------	17
249	99	249, 25	--------	19

(2) *J-band (med).*

R–417(*)/TRC RF channel No.	Do not use T–302(*)/TRC RF channel No.					
	Low		Medium		High	
MED Scale	Scale		Scale		Scale	
A	A	B	A	B	A	B
1	101	26	1	21		
5	102	27	5	23		
9	103	28	9	25		
13	105	29	13	27		
17	106	30	17	29		
21	107	31	21	31		
25	109	32	25	33		
29	110	33	29	35		
33	111	34	33	37		
37	113	35	37	39		
41	114	36	41	41		
45	115	37	45	43		
49	117	38	49	45		
53	118	39	53	47		
57	119	40	57	49		
61	121	41	61	51		
65	122	42	65	53		
69	123	43	69	55		
73	125	44	73	57		
77	126	45	77	59		
81	127	46	81	61		
85	129	47	85	63		
89	130	48	89	65		
93	131	49	93	67		
97	133	50	97	69		
101	134	51	101	71		
105	135	52	105	73		
109	137	53	109	75		
113	138	54	113	77		
117	139	55	117	79		
121	141	56	121	81		
125	142	57	125	83		
129	143	58	129	85		
133	145	59	133	87		
137	146	60	137	89		
141	147	61	141	91		
145	149	62	145	93		
149	150	63	149	95		
153	151	64	153	97		
157	153	65	157	99		
161	154	66	161	101		
165	155	67	165	103		
169	157	68	169	105		
173	158	69	173	107		
177	159	70	177	109		
181	161	71	181	111		
185	162	72	185	113		
189	163	73	189	115		
193	165	74	193	117		
197	166	75	197	119		

R–417(*)/TRC RF channel No.	Do not use T–302(*)/TRC RF channel No.					
	Low		Medium		High	
MED Scale	Scale		Scale		Scale	
B	A	B	A	B	A	B
1	167	76	1	1, 121		
3	169	77	3	3, 123		
5	170	78	5	5, 125		
7	171	79	7	7, 127		
9	173	80	9	9, 129		
11	174	81	11	11, 131		
13	175	82	13	13, 133		
15	177	83	15	15, 135		
17	178	84	17	17, 137		
19	179	85	19	19, 139		
21	181	86	21	21, 141		
23	182	87	23	23, 143		
25	183	88	25	25, 145		
27	185	89	27	27, 147		
29	186	90	29	29, 149		
31	187	91	31	31, 151	All	All
33	189	92	33	33, 153		
35	190	93	35	35, 155		
37	191	94	37	37, 157		
39	193	95	39	39, 159		
41	194	96	41	41, 161		
43	195	97	43	43, 163		
45	197	98	45	45, 165		
47	198	99	47	47, 167		
49	199	100	49	49, 169		
51	----------	101, 1	51	51, 171		
53	----------	102, 1	53	53, 173		
55	----------	103, 2	55	55, 175		
57	----------	104, 3	57	57, 177		
59	----------	105, 3	59	59, 179		
61	----------	106, 4	61	61, 181		
63	----------	107, 5	63	63, 183		
65	----------	108, 5	65	65, 185		
67	----------	109, 6	67	67, 187		
69	----------	110, 7	69	69, 189		
71	----------	111, 7	71	71, 191		
73	----------	112, 8	73	73, 193		
75	----------	113, 9	75	75, 195		
77	----------	114, 9	77	77, 197		
79	----------	115, 10	79	79, 199		
81	----------	116, 11	81	81, 201		
83	----------	117, 11	83	83, 203		
85	----------	118, 12	85	85, 205		
87	----------	119, 13	87	87, 207		
89	----------	120, 13	89	89, 209		
91	----------	121, 14	91	91, 211	All	All
93	----------	123, 15	93	93, 213		
95	----------	123, 15	95	95, 215		
97	----------	124, 16	97	97, 217		
99	----------	125, 17	99	99, 219		
101	----------	126, 17	101	101, 221		
103	----------	127, 18	103	103, 223		

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.					
	Low		Medium		High	
MED Scale	Scale		Scale		Scale	
B	A	B	A	B	A	B
105	----------	128, 19	105, 3	105, 225		
107	----------	129, 19	107, 5	107, 227		
109	----------	130, 20	109, 6	109, 229		
111	----------	131, 21	111, 7	111, 231		
113	----------	132, 21	113, 9	113, 233		
115	----------	133, 22	115, 10	115, 235		
117	----------	134, 23	117, 11	117, 237		
119	----------	135, 23	119, 13	119, 239		
121	----------	136, 24	121, 14	121, 241		
123	----------	137, 25	123, 15	123, 243		
125	----------	138, 25	125, 17	125, 245		
127	----------	139, 26	127, 18	127, 247		
129	----------	140, 27	129, 19	129, 249		
131	----------	141, 27	131, 21	131	2	
133	----------	142, 28	133, 22	133	6	
135	----------	143, 29	135, 23	135	10	
137	----------	144, 29	137, 25	137	14	
139	----------	145, 30	139, 26	139	18	
141	----------	146, 31	141, 27	141	22	
143	----------	147, 31	143, 29	143	26	
145	----------	148, 32	145, 30	145	30	
147	----------	149, 33	147, 31	147	34	
149	----------	150, 33	149, 33	149	38	
151	----------	151, 34	151, 34	151	All	All
153	----------	152, 35	153, 35	153	46	
155	----------	153, 35	155, 37	155	50	
157	----------	154, 36	157, 38	157	54	
159	----------	155, 37	159, 39	159	58	
161	----------	156, 37	161, 41	161	62	
163	----------	157, 38	163, 42	163	66	
165	----------	158, 39	165, 43	165	70	
167	----------	159, 39	167, 45	167	74	
169	----------	160, 40	169, 46	169	78	
171	----------	161, 41	171, 47	171	82	
173	----------	162, 41	173, 49	173	86	
175	----------	163, 42	175, 50	175	90	
177	----------	164, 43	177, 51	177	94	
179	----------	165, 43	179, 53	179	98	
181	----------	166, 44	181, 54	181	102	
183	----------	167, 45	183, 55	183	106	
185	----------	168, 45	185, 57	185	110	
187	----------	169, 46	187, 58	187	114	
189	----------	170, 47	189, 59	189	118	
191	----------	171, 47	191, 61	191	122	
193	----------	172, 48	193, 62	193	126	
195	----------	173, 49	195, 63	195	130	
197	----------	174, 49	197, 65	197	134	
199	----------	175, 50	199, 66	199	138	
201	----------	176, 51	67	201, 1	142	
203	----------	177, 51	69	203, 2	146	
205	----------	178, 52	70	205, 3	150	
207	----------	179, 53	71	207, 4	154	

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.					
	Low		Medium		High	
MED Scale	Scale		Scale		Scale	
A	A	B	A	B	A	B
209	----------	180, 53	73	209, 5	158	
211	----------	181, 54	74	211, 6	All	All
213	----------	182, 55	75	213, 7	166	
215	----------	183, 55	77	215, 8	170	
217	----------	184, 56	78	217, 9	174	
219	----------	185, 57	79	219, 10	178	
221	----------	186, 57	81	221, 11	182	
223	----------	187, 58	82	223, 12	186	
225	----------	188, 59	83	225, 13	190	
227	----------	189, 59	85	227, 14	194	
229	----------	190, 60	86	229, 15	198	
231	----------	191, 61	87	231, 16	----------	1
233	----------	192, 61	89	233, 17	----------	3
235	----------	193, 62	90	235, 18	----------	5
237	----------	194, 63	91	237, 19	----------	7
239	----------	195, 63	93	239, 20	----------	9
241	----------	196, 64	94	241, 21	----------	11
243	----------	197, 65	95	243, 22	----------	13
245	----------	198, 65	97	245, 23	----------	15
247	----------	199, 66	98	247, 24	----------	17
249	----------	200, 67	99	249, 25	----------	19

(3) *J-band (hi).*

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.					
	Low		Medium		High	
HI scale	Scale		Scale		Scale	
A	A	B	A	B	A	B
1	----------	201, 67	101	26	1	21
5	----------	202, 68	102	27	5	23
9	----------	203, 69	103	28	9	25
13	----------	204, 69	105	29	13	27
17	----------	205, 70	106	30	17	29
21	----------	206, 71	107	31	21	31
25	----------	207, 71	109	32	25	33
29	----------	208, 72	110	33	29	35
33	----------	209, 73	111	34	33	37
37	----------	210, 73	113	35	37	39
41	----------	211, 74	114	36	41	41
45	----------	212, 75	115	37	45	43
49	----------	213, 75	117	38	49	45
53	----------	214, 76	118	39	53	47
57	----------	215, 77	119	40	57	49
61	----------	216, 77	121	41	61	51
65	----------	217, 78	122	42	65	53
69	----------	218, 79	123	43	69	55
73	----------	219, 79	125	44	73	57
77	----------	220, 80	126	45	77	59
81	----------	221, 81	127	46	81	61
85	----------	222, 81	129	47	85	63
89	----------	223, 82	130	48	89	65
93	----------	224, 83	131	49	93	67
97	----------	225, 83	133	50	97	69
101	----------	226, 84	134	51	101	71
105	----------	227, 85	135	52	105	73
109	----------	228, 85	137	53	109	75
113	----------	229, 86	138	54	113	77
117	----------	230, 87	139	55	117	79
121	----------	231, 87	141	56	121	81
125	----------	232, 88	142	57	125	83
129	----------	233, 89	143	58	129	85
133	----------	234, 89	145	59	133	87
137	----------	235, 90	146	60	137	89
141	----------	236, 91	147	61	141	91
145	----------	237, 91	149	62	145	93
149	----------	238, 92	150	63	149	95
153	----------	239, 93	151	64	153	97
157	----------	240, 93	153	65	157	99
161	----------	241, 94	154	66	161	101
165	----------	242, 95	155	67	165	103
169	----------	243, 95	157	68	169	105
173	----------	244, 96	158	59	173	107
177	----------	245, 97	159	70	177	109
181	----------	246, 97	161	71	181	111
185	----------	247, 98	162	72	185	113
189	----------	248, 99	163	73	189	115
193	----------	249, 99	165	74	193	117
197	----------	250, 100	166	75	197	119

R-417(*)/TRC RF channel No.	Do not use T-302(*)/TRC RF channel No.					
	Low		Medium		High	
III scale	Scale		Scale		Scale	
B	A	B	A	B	A	B
1		101	167	76	1	1, 121
3		101	169	77	3	3, 123
5		102	170	78	5	5, 125
7		103	171	79	7	7, 127
9		103	173	80	9	9, 129
11		104	174	81	11	11, 131
13		105	175	82	13	13, 133
15		105	177	83	15	15, 135
17		106	178	84	17	17, 137
19		107	179	85	19	19, 139
21		107	181	86	21	21, 141
23		108	182	87	23	23, 143
25		109	183	88	25	25, 145
27		109	185	89	27	27, 147
29		110	186	90	29	29, 149
31		111	187	91	31	31, 151
33		111	189	92	33	33, 153
35		112	190	93	35	35, 155
37		113	191	94	37	37, 157
39		113	193	95	39	39, 159
41		114	194	96	41	41, 161
43		115	195	97	43	43, 163
45		115	197	98	45	45, 165
47		116	198	99	47	47, 167
49		117	199	100	49	49, 169
51		117	200	101	51	51, 171
53		118		102, 1	53	53, 173
55		119		103, 2	55	55, 175
57		119		104, 3	57	57, 177
59		120		105, 3	59	59, 179
61		121		106, 4	61	61, 181
63		121		107, 5	63	63, 183
65		122		108, 5	65	65, 185
67		123		109, 6	67	67, 187
69		123		110, 7	69	69, 189
71		124		111, 7	71	71, 191
73		125		112, 8	73	73, 193
75		125		113, 9	75	75, 195
77		126		114, 9	77	77, 197
79		127		115, 10	79	79, 199
81		127		116, 11	81	81, 201
83		128		117, 11	83	83, 203
85		129		118, 12	85	85, 205
87		129		119, 13	87	87, 207
89		130		120, 13	89	89, 209
91		131		121, 14	91	91, 211
93		131		122, 15	93	93, 213
95		132		123, 15	95	95, 215
97		133		124, 16	97	97, 217
99		133		125, 17	99	99, 219
101		134		126, 17	101, 1	101, 221
103		135		127, 18	103, 2	103, 223

R–417(*)/TRC RF channel No.	Do not use T–302(*)TRC RF channel No.					
	Low		Medium		High	
HI scale	Scale		Scale		Scale	
B	A	B	A	B	A	B
105	----------	135	----------	128, 19	105, 3	105, 225
107	----------	136	----------	129, 19	107, 5	107, 227
109	----------	137	----------	130, 20	109, 6	109, 229
111	----------	137	----------	131, 21	111, 7	111, 231
113	----------	138	----------	132, 21	113, 9	113, 233
115	----------	139	----------	133, 22	115, 10	115, 235
117	----------	139	----------	134, 23	117, 11	117, 237
119	----------	140	----------	135, 23	119, 13	119, 239
121	----------	141	----------	136, 24	121, 14	121, 241
123	----------	141	----------	137, 25	123, 15	123, 243
125	----------	142	----------	138, 25	125, 17	125, 245
127	----------	143	----------	139, 26	127, 18	127, 247
129	----------	143	----------	140, 27	129, 19	129, 249
131	----------	144	----------	141, 27	131, 21	131
133	----------	145	----------	142, 28	133, 22	133
135	----------	145	----------	143, 29	135, 23	135
137	----------	146	----------	144, 29	137, 25	137
139	----------	147	----------	145, 30	139, 26	139
141	----------	147	----------	146, 31	141, 27	141
143	----------	148	----------	147, 31	143, 29	143
145	----------	149	----------	148, 32	145, 30	145
147	----------	149	----------	149, 33	147, 31	147
149	----------	150	----------	150, 33	149, 33	149
151	----------	151	----------	151, 34	151, 34	151
153	----------	151	----------	152, 35	153, 35	153
155	----------	152	----------	153, 35	155, 37	155
157	----------	153	----------	154, 36	157, 38	157
159	----------	153	----------	155, 37	159, 39	159
161	----------	154	----------	156, 37	161, 41	161
163	----------	155	----------	157, 38	163, 42	163
165	----------	155	----------	158, 39	165, 43	165
167	----------	156	----------	159, 39	167, 45	167
169	----------	157	----------	160, 40	169, 46	169
171	----------	157	----------	161, 41	171, 47	171
173	----------	158	----------	162, 41	173, 49	173
175	----------	159	----------	163, 42	175, 50	175
177	----------	159	----------	164, 43	177, 51	177
179	----------	160	----------	165, 43	179, 53	179
181	----------	161	----------	166, 44	181, 54	181
183	----------	161	----------	167, 45	183, 55	183
185	----------	162	----------	168, 45	185, 57	185
187	----------	163	----------	169, 46	187, 58	187
189	----------	163	----------	170, 47	189, 59	189
191	----------	164	----------	171, 47	191, 61	191
193	----------	165	----------	172, 48	193, 62	193
195	----------	165	----------	173, 49	195, 63	195
197	----------	166	----------	174, 49	197, 65	197
199	----------	167	----------	175, 50	199, 66	199, 1
201	----------	167	----------	176, 51	67	201, 1
203	----------	168	----------	177, 51	69	203, 2
205	----------	169	----------	178, 52	70	205, 3
207	----------	169	----------	179, 53	71	207, 4

R–417(*)/TRC RF channel No.	Do not use T–302(*)/TRC RF channel No.					
	Low		Medium		High	
III scale	Scale		Scale		Scale	
B	A	B	A	B	A	B
209		170		180, 53	73	209, 5
211		171		181, 54	74	211, 6
213		171		182, 55	75	213, 7
215		172		183, 55	77	215, 8
217		173		184, 56	78	217, 9
219		173		185, 57	79	219, 10
221		174		186, 57	81	221, 11
223		175		187, 58	82	223, 12
225		175		188, 59	83	225, 13
227		176		189, 59	85	227, 14
229		177		190, 60	86	229, 15
231		177		191, 61	87	231, 16
233		178		192, 61	89	233, 17
235		179		193, 62	90	235, 18
237		179		194, 63	91	237, 19
239		180		195, 63	93	239, 20
241		181		196, 64	94	241, 21
243		181		197, 65	95	243, 22
245		182		198, 65	97	245, 23
247		183		199, 66	98	247, 24
249		183		200, 67	99	249, 25

g. Power Supply PP–685(*)/TRC.

Power requirements	115 v, 50 to 60 cps, 10 amp.
Power output (dc):	
Regulated	11 150 v, 275 ma, 200 to 350 v, 35 ma.
Unregulated	250 v, 10 ma, 300 to 900 v, 500 ma, −12 v, 75 ma.
Power output (ac)	2.5 v, 6.25 amp, 6.3 v, 12 amp, 115 v, 2 amp.
Number of tubes	10.

h. Transformer, Power, Fixed Auto Transformer TF–167/TRC.

Input voltage	95 to 130 v or 190 to 260 v, 50 to 60 cps.
Output voltage	115 v, ±5.5 v, 50 to 60 cps, 16 amp.

i. Interconnecting Box J–532/U.

Input voltage	95 to 130 v or 190 to 260 v, 50 to 60 cps.
Output voltage:	
95 to 130 volts	10 outputs.
190 to 260 volts	6 outputs.

j. Switch Box SA–331/U.

Input voltage	95 to 130 v or 190 to 260 v, 50 to 60 cps.
Output voltage	95 to 130 v or 190 to 260 v, 50 to 60 cps (corresponds to input voltage).

k. Antenna.

Type:	
Antenna AS–756/GRC (A-band).	Two three-element, yagi arrays.
Antenna AS–639/TRC (B-band).	Two half-wave dipoles with plane reflector.
Antenna AS–640/TRC (C-band).	Two half-wave dipoles with plane reflector.
Antenna AS–755/GRC (D-band).	Four half-wave dipoles with plane reflector.
Antenna Assembly AS–1082/TRA–25 (F-band) (AN/TRA–25 only).	Two four-stacked, folded dipoles with plane reflector.
Antenna AT–903/G (F-band AN/TRA–25A or J-band OA–3668A/TRC–24).	Ridge-loaded waveguide horn.

Operating frequency:	
Antenna AS–756/GRC (A-band).	40 to 100 mcs.
Antenna AS–639/TRC (B-band).	100 to 250 mcs.
Antenna AS–640/TRC (C-band).	250 to 400 mcs.
Antenna AS–755/GRC (D-band).	400 to 600 mcs.
Antenna AT–903/G ((F-band) (AN/TRA–25A) or (J-band) (OA–3668A/TRC–24)).	600 to 1,875 mcs.
Polarization	Horizontal or vertical.
Beam width	From 25° to 120° (varies with frequency and polarization).
Gain:	
Antenna AS–756/GRC (A-band).	5 db.
Antenna AS–639/TRC (B-band).	6 db.
Antenna AS–640/TRC (C-band).	8 db.
Antenna AS–755/GRC (D-band).	10 db.
Antenns Assembly AS–1082/TRA–25 (F-band) (AN/TRA–25 only).	12 db.
Antenna AT–903/G (F-band) (AN/TRA–25A).	11 db or more.
Antenna AT–903/G (J-band) (OA–3668A/TRC–24).	15 db.
Major-to-minor lobe ratio (A-, B-, C-, D-, and F-bands).	Greater than 8 db.
Major-to-minor lobe ratio (J-band).	15 db minimum.
Mast AB–235/G:	
Type	Tubular steel.
Number of sections	9.
Maximum height	45 ft.

l. Generator Set, Gasoline Engine PU–286/G. Refer to TM 11–6115–204–10, –20, and –35.

1–6. Items Comprising an Operable Equipment

FSN	*Qty*	*Nomenclature, part No., and mfr code*	*Usable on Code*	*Fig. No.*
5820–503–1133		Radio Set AN/TRC–24		
		Consisting of:		
		NOTE		
		The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708–42 and used to identify manufacturer, distributor, or Government agency, etc.		
5820–543–0112	1	Amplifier Group OA–1392/GRC		1–6
		Consisting of:		
5820–324–8714	1	Amplifier, Converter AM–913/TRC		1–6
5820–503–3378	1	Radiofrequency Amplifier AM–912/TRC, AM–912A/TRC		1–6
5820–543–0110	1	Amplifier Group OA–1394/GRC		1–8
		Consisting of:		
5820–324–8715	1	Amplifier-Converter AM–914/TRC		1–8
5820–392–5504	1	Amplifier-Multimeter, Radiofrequency AM–915A/GRC		1–8
5820–543–0115	1	Antenna Group OA–1389/GRC		1–4
		Consisting of:		
4030–973–4147	16	Anchor, Shackle Assembly SC–B–66345		1–4
5975–393–1269	6	Clamp, Electrical: SC–C–66471; 80063		1–4
5820–505–7028	1	Cradle, Antenna Mast: SC–C–66409; 80063		1–4
5975–284–6013	4	Guy MK–1483/G: 75 ft		1–4
8130–321–9994	2	Reel, Cable: 16622; 80063		1–4
5820–264–7477	2	Reflector Antenna AT–414/TRC		1–4
5820–776–1909	4	Retainer Chain Assembly: SM–B–347150; 80063		1–4
4030–711–1898	2	Shackle, Chain: SC–B–66346; 80063		1–4, 2–22
5820–262–9175	1	Support, Antenna Reflector AB–325/TRC		1–4
5820–566–7945	1	Antenna Accessories Group OA–1398/GRC		1–5
		Consisting of:		
5820–295–7129	1	Base, Mast: SC–D–66271; 80063		1–5
5995–682–3352	2	Cable Assembly, Radiofrequency CG–1030A/U: 80 ft lg	1–5	
	1	Cap, Gin Pole: SO–C–66296; 64959		
5940–549–6572	4	Clamp, Electrical: SC–B–66453; 80063		1–5

1–6. Items Comprising an Operable Equipment—Continued

FSN	Qty	Nomenclature, part No., and mfr code	Usable on Code	Fig. No.
5975–395–9002	5	Clamp, Guy Stake: SC–C–66291; 80063		1–5
5975–284–8266	4	Guy MX–1483/G: 50 ft		1–5
5975–285–0428	4	Guy MX–1483/G: 58 ft		1–5
5975–284–8976	4	Guy MX–1484/G: 70 ft		1–5
5820–264–7469	14	Mast Section AB–332/G		1–5
5975–030–2981	3	Plate, Guy: SC–C–66290; 80063		1–5
8130–292–1108	1	Reel, Cable RC–404/TR		1–5
8130–321–9994	6	Reel, Cable: SC–D–16622; 80063		1–5
5975–284–9302	2	Rope, Guy: SC–D–66330; 80063		1–5
4030–187–5261	4	Stake, Ground GP–2		1–5
4030–298–1382	5	Stake, Guy GP–113/G		1–5
5820–543–0111	1	Antenna Filter Group OA–1393/GRC		1–7
		Consisting of:		
5820–787–6640	1	Antenna Assembly: 412/TRC–002; 00341		1–7
5820–264–7502	1	Antenna AS–639/TRC		1–7
5820–284–7092	4	Antenna Dipole AT–412/TRC		1–7
5820–787–6639		Bracket: 412/TRC–001; 00341		
5995–753–2099	2	Cable Assembly, Radiofrequency CG–1042/U		1–7
5935–259–0019	2	Connector, Adapter UG–643/U		1–7, 1–14
5915–281–0260	1	Filter, Band-Pass F–192/U		1–7
5915–281–0259	1	Filter, Band-Pass F–193/U		1–7
5915–281–0258	1	Filter, Band-Pass F–194/U		1–7
5915–281–0257	1	Filter, Band-Pass F–195/U		1–7
5915–281–0256	1	Filter, Band-Pass F–196/U		1–7
5915–281–0255	1	Filter, Band-Pass F–197/U		1–7
5915–537–7363	1	Filter Kit MK–123/TRC		
5820–787–6638	1	Tuning Element: 412/TRC–003; 00341		
5820–543–0109	1	Antenna-Filter Group OA–1395/GRC		1–9
		Consisting of:		
5820–284–7364	4	Antenna Dipole AT–413/TRC		1–9
5995–753–2099	2	Cable Assembly, Radiofrequency CG–1042B/U		1–9
5935–259–0019	2	Connector, Adapter UG–643		1–9
5915–281–0254	1	Filter, Band-Pass F–199/U		1–9
5915–281–0253		Filter, Band-Pass F–200/U		1–9
5915–281–0276	1	Filter, Band-Pass F–201/U		1–9
5915–281–0270	1	Filter, Band-Pass F–202/U		1–9
5915–281–0271	1	Filter, Band-Pass F–203/U		1–9
5915–281–0269	1	Filter, Band-Pass F–204/U		1–9
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
		Consisting of:		
5995–636–9020	1	Cable Assembly, Power Electrical CX–2251/u: (150 ft) SC–D–66741; 80063		1–3
5995–903–7725	2	Cable Assembly, Power, Electrical CX–2254/U: (10 ft) SC–D–66747; 80063		1–3
7240–222–3088	4	Drum, Gasoline: (5 gal) 42–D–12801; 21450		1–3
8130–711–0537	1	Reel, Cable RC–405/TR: SC–D–68449; 80063		1–3
6115–379–3991		Spouts, Gasoline: 99549; 80063		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
		Consisting of:		
5995–284–5959	1	Cable Assembly, Radiofrequency CG–718A/U		1–2
5995–296–1987	2	Cable Assembly, Radiofrequency CG–789A/U		1–2
5995–296–1988	1	Cable Assembly, Radiofrequency CG–1091/U		1–2
5995–823–2145	1	Cable Assembly, Radiofrequency CG–1103/U		1–2
5995–296–1991	2	Cable Assembly, Special Purpose, Electrical CX–2406/U		1–2
5995–524–5557	1	Cable Assembly, Special Purpose, Electrical CX–2420/U		1–2
5995–296–1444	1	Cable Assembly, Special Purpose, Electrical CX–2473/U		1–2
5820–295–9624	1	Interconnecting Box J–532/U		1–2
5930–548–6806	1	Switch Box SA–331/U		1–2
6625–511–4397	1	Wattmeter ME–82/U		1–2

1–6. Items Comprising an Operable Equipment—Continued

FSN	Qty	Nomenclature, part No., and mfr code	Usable on Code	Fig. No.
5820–776–5406	1	Radio Set Group AN/TRA–25		1–10
5820–856–9911	1	Radio Set Group AN/TRA–25A, AN/TRA–25B		1–11
		Consisting of:		
		NOTE		
		On the usable on code number 1 refers to the AN/TRA–25; number 2 refers to the AN/TRA–25A; number 3 refers to the AN/TRA–25B.		
5935–892–8878	4	Adapter UG–1374/U	3	1–12
5820–776–5409	1	Amplifier Mixer Stage AM–2537/TRA–25	1,2,3	1–11
5820–776–5407	2	Antenna Assembly AS–1082/TRA–25	1	1–10
		Which Includes:		
5820–856–9925	2	Antenna AS–1083/TRA–25		2–31
5820–896–9925	2	Antenna AT–903/G	2,3	2–9
5820–856–9924	1	Antenna Support AB–720/GR	2,3	1–12
5995–889–0526	2	Cable Assembly, Radiofrequency CG–1030A/U: 80 ft	2	1–11
5995–144–0245	2	Cable Assembly, Radiofrequency CG–1859/U: 80 ft lg	3	1–12
	2	Cable Assembly, Radiofrequency CG–1886/U	1,2	1–10
5995–776–5425	1	Cable Assembly, Radiofrequency CG–1887/TRA–25: 9⅞ in lg	1,2	1–10
5995–729–9528	1	Cable Assembly, Radiofrequency CG–1888/U: 12–13/32 in lg	1,2	1–10
5995–729–9530	4	Cable Assembly, Radiofrequency CG–1889/U	1	1–10
5995–807–1827	2	Cable Assembly, Radiofrequency CG–1890/U	1,2	1–10
5995–729–9522	1	Cable Assembly, Special Purpose CX–6128/U	1,2	1–10
	4	Cable Assembly, Radiofrequency CG–2636/U: 6 ft lg	3	1–12
5820–776–5408	1	Mixer Stage, Frequency CV–932/TRA–25	1,2,3	1–10
5820–776–5414	1	Oscillator Multiplier O–734/TRA–25, O–734A/TRA–25A	1,2	1–10
5820–776–5402	1	Oscillator Multiplier O–735/TRA–25, O–735A/TRA–25A	1,2	1–10
5820–064–5452	2	Reel, Cable RC–436/GRC	3	1–12
5820–543–0116	1	Radio Set Group OA–1387/GRC		1–1
		Consisting of:		
5820–537–3782	1	Accessory Kit MK–133/TRC		1–1, 1–17
5995–280–6782	1	Cable Assembly, Power, Electrical CX–2253/U		1–17
5995–257–7123	1	Cable Assembly, Power, Electrical CX–2256/U		1–17
5995–642–3050	1	Cable Assembly, Power, Electrical CX–2257/U		1–17
5995–642–2988	1	Cable Assembly, Power, Electrical CX–2258/U		1–17
5995–272–9103	1	Cable Assembly, Radiofrequency CG–1031/U		1–17
5995–280–4696	1	Cable Assembly, Special Purpose CX–2252/U		1–17
5995–256–4071	1	Cable Assembly, Telephone CX–1512/U		1–17
5965–644–0334	1	Handset H–90/U		1–1, 1–17
6240–155–8706	3	Lamp, Incandescent: 15571–2; 96906		1–17
6240–155–8634	1	Lamp, Incandescent: MS–15586–1; 96906		
5935–523–9838	1	Adapter: 12129; 74545		4–22
5935–201–2409	1	Connector, Adapter: 12031; 74545		
5935–503–2695	1	Interconnecting Box: SC–D–65772; 80063		
5820–500–4378	1	Power Supply PP–685/TRC, PP–685A/TRC		1–1, 4–22
5820–503–3960	1	Receiver, Radio R–417/TRC, R–417A/TRC		1–1, 2–42
5950–309–5334	1	Transformer, Power, Fixed Autotransformer TF–167/TRC		1–1, 3–4
5820–503–3295	1	Transmitter, Radio T–302/TRC, T–302A/TRC		1–1, 3–1
5820–082–3214	1	Radio-Set Group OA–3668A/TRC–24		1–12
		Consisting of:		
5820–856–9915	1	Amplifier, Converter AM–3203/TRC–24		1–12
5820–856–9914	1	Amplifier, Converter AM–3204/TRC–24		1–12
5820–856–9925	2	Antenna AT–903/G		1–12
5995–144–0245	2	Cable Assembly, Radiofrequency CG–1859/U: 80 ft		1–12
5995–985–8275	4	Cable Assembly, Radiofrequency CG–636/U: 5 ft 9 in		1–12

1-6. Items Comprising an Operable Equipment—Continued

FSN	Qty	Nomenclature, part No., and mfr code	Usable on Code	Fig. No.
5995-889-0528	1	Cable Assembly, Radiofrequency CG-2240/U: 3 ft		1-12
5995-504-6945	1	Cable Assembly, Special Purpose, Electrical CX-2324A/U		1-12
5995-729-9522	1	Cable Assembly, Special Purpose, Electrical CX-6128/U 5 ft 5 in lg		1-12
5995-082-3179	1	Crystal Unit, Quartz CR-54A/U: 54.17970 mc		
5995-082-3180	1	Crystal Unit, Quartz CR-54A/U: 60.000 mc		
5995-082-3281	1	Crystal Unit, Quartz CR-54A/U: 61. 47140 mc		
5995-082-3182	1	Crystal Unit, Quartz CR-54A/U: 68.7630 mc		
5715-889-4836	1	Filter, Band-Pass F-691/TRC-24		1-12, 4-17
5820-856-9916	1	Oscillator-Multiplier 0-902/TRC-24		1-12
5820-856-9917	1	Oscillator-Multiplier 0-903/TRC-24		1-12
5820-856-9918	1	Oscillator-Multiplier 0-904/TRC-24		1-12
5820-856-9924	1	Support Antenna AB-720/G		1-12
5820-503-2578	1	Radio Terminal Set AN/TRC-35		
		Consisting of:		
5820-543-0112	1	Amplifier Group OA-1392/GRC		1-6
5820-543-0110	1	Amplifier Group OA-1394/GRC		1-8
5820-566-7945	1	Antenna Accessories Group OA-1398/GRC		1-5
5820-543-0110	1	Antenna-Filter Group OA-1393/GRC		1-7
5820-543-0109	1	Antenna-Filter Group OA-1395/GRC		1-9
5820-543-0115	1	Antenna Group OA-1389/GRC		1-4
5820-543-1282	1	Generator Set Group OA-1675/GRC		1-3
5820-543-1283	1	Power Accessories Group OA-1676/GRC		1-2
5820-856-9911	2	Radio Set Group AN/TRA-25A, AN/TRA-25B		1-11
5820-543-0116	1	Radio Set Group OA-1387/GRC		1-1
5820-082-3214	2	Radio Set Group OA-3668A/TRC-24		1-12
5820-776-5406	2	Radio Set Group AN/TRA-25		1-10
5820-569-0031		Radio Relay Set AN/TRC-36		
		Consisting of:		
5820-543-0112	2	Amplifier Group OA-1392/GRC		1-6
5820-543-0110	2	Amplifier Group OA-1394/GRC		1-8
5820-566-7945	1	Antenna Accessories Group OA-1398/GRC		1-5
5820-543-0111	2	Antenna-Filter Group OA-1393/GRC		1-7
5820-543-0109	1	Antenna-Filter Group OA-1395/GRC		1&9
5820-543-0115	1	Antenna Group OA-1389/GRC		1-4
5820-543-1282	1	Generator Set Group OA-1675/GRC		1-3
5820-543-1283	1	Power Accessories Group OA-1676/GRC		1-2
5820-776-5406	3	Radio Set Group an/TRA-25		1-10
5820-856-9911	3	Radio Set Group AN/TRA-25A, AN/TRA-25B		1-11
5820-543-0116	2	Radio Set Group OA-1387/GRC		1-1
5820-082-3214	3	Radio Set Group OA-3668A/TRA-24		1-12
5820-581-2104		Radio SetAN/GRC-75		
		Consisting of		
5820-566-7945	1	Antenna Accessories Group OA-1398/GRC		1-5
5820-543-0114	1	Amplifier Group OA-1390/GRC		1-13
		Consisting of:		
5935-681-5013	1	Adapter, Connector UG-491B/U		
5820-566-4909		Amplifier-Converter AM-1179/GRC: SC-D-64021; 80063		1-13
5820-566-3861	1	Amplifier, Radiofrequency AM-1180/GRC		1-13
5820-543-0113		Antenna Filter Group OA-1391/GRC		1-14
		Consisting of:		
5935-259-0019	2	Adapter, Connector UG-643/U: MS-35288; 96906		1-14
5820-679-1553	2	Antenna Boom: SC-C-62856; 80063		1-14
5820-543-1506	12	Antenna Element: SC-C-63912; 80063		1-14

1-6. Items Comprising an Operable Equipment—Continued

FSN	Qty	Nomenclature, part No., and mfr code	Usable on Code	Fig. No.
5820-543-1505	12	Antenna Element: SC-C-63900; 80063		1-14
5820-679-2060	1	Antenna Mast-Stand: SM-D-117013; 80063		1-14
5820-543-1504	12	Antenna Subassembly: SC-B-63899; 80063		1-14
5820-679-2061	1	Array, Spacer Bar Antenna: SC-D-62857; 80063		1-14
5975-393-1269	2	Clamp, Assembly: SC-C-66471; 80063		2-17
5915-570-7448	1	Filter Kit MK-236/GRC: SC-D-62635; 80063		
5820-679-2062	1	Mast Head Casting Assembly, Antenna: SC-D-62855; 80063		1-14
5820-543-1282	1	Generator Set Group OA-1675/GRC		1-3
5820-542-1288	1	Power Accessories Group OA-1676/GRC		1-2
5820-543-0110	1	Radio Set Group OA-1387/TRC		1-1
5820-082-8214	1	Radio Set Group OA-3668A/TRC-24		1-12
5820-557-6260	1	Radio Terminal Set AN/GRC-76		
		Consisting of:		
5820-566-7945	1	Antenna Accessories Group OA-1398/GRC		1-5
5820-543-0113	1	Antenna-Filter Group OA-1931/GRC		1-14
5820-543-0114	1	Amplifier Group OA-1390/GRC		1-13
5820-543-1282	1	Generator Set Group OA-1675/GRC		1-3
5820-543-1283	1	Power Accessories Group OA-1676/GRC		1-2
5820-543-0116	1	Radio Set Group OA-1387/GRC		1-1
5820-082-3214	2	Radio Group OA-3668A/TRC-24		1-12
5820-557-6259	1	Radio Repeater Set AN/GRC-77		
		Consisting of:		
5820-566-7945	1	Antenna Accessories Group OA-1398/GRC		
5820-543-0113	1	Antenna-Filter Group OA-1391/GRC		1-5
5820-543-0114	2	Amplifier Group OA-1390/GRC		1-14
5820-543-1282	2	Generator Set Group OA-1675/GRC		1-13
5820-543-1283	1	Power Accessories Group OA-1676/GRC		1-3
5820-543-0116	2	Radio Set Group OA-1387/GRC		1-2
5820-082-3214	3	Radio Set Group OA-3668A/TRC-24		1-1
5820-581-2105	1	Radio Set AN/GRC-78		1-12
		Consisting of:		
5820-543-0112	1	Amplifier Group OA-1392/GRC		1-16
5820-543-0108	1	Amplifier Group OA-1396/GRC: SC-D-64398; 80063		1-15
		Consisting of:		
5820-566-4910	1	Amplifier-Converter AM-1177/GRC: SC-D-62782; 80063		1-15
5820-566-3758	1	Amplifier-Multiplier Radiofrequency AM-1178/GRC: SC-D-63067; 80063		1-15
5820-543-0107		Antenna-Filter Group OA-1397/GRC: SC-C-62863; 80063		1-16
		Consisting of:		
5935-259-0019	4	Adapter, Connector UG-643/U		1-16
5820-566-4912	1	Antenna AS-755/GRC		
5820-566-4913	8	Antenna Element AT-566/GRC		1-16
5995-542-6866	2	Cable Assembly, Radiofrequency CG-1544/U		1-16
5995-578-6887	4	Cable Assembly, Radiofrequency CG-1370/U		1-16
5820-295-7120	8	Cap, Electrical: SC-B-66448; 80063		1-16
5915-564-2489	1	Filter, Band Pass F-233/U		1-16
5915-564-2490	1	Filter, Band Pass F-234/U		1-16
5915-564-2491	1	Filter, Band Pass F-235/U		1-16
5915-564-2492	1	Filter, Band Pass F-236/U		1-16
5915-564-2487	1	Filter Kit MK-228-GRC		
5820-543-0115	1	Antenna Group OA-1389/GRC		1-4
5820-543-1282	1	Generator Set Group OA-1675/GRC		1-3
5820-543-1283	1	Power Accessories Group OA-1676/GRC		1-2
5820-776-5406	1	Radio Set Group AN/TRA-25		1-10
5820-856-9911	1	Radio Set Group AN/TRA-25A, AN/TRA-25B		
5820-543-0116	1	Radio Set Group OA-1387/GRC		1-1

1–6. Items Comprising an Operable Equipment—Continued

FSN	Qty	Nomenclature, part No., and mfr code	Usable on Code	Fig. No.
5820–082–3214	1	Radio Set Group OA–3668A/TRC–24		1–12
5820–693–9796		Radio Terminal Set AN/GRC–79		
		Consisting of;		
5820–543–0112	1	Amplifier Group OA–1392/GRC		1–6
5820–543–0108	1	Amplifier Group OA–1396/GRC		1–15
5820–566–7945	1	Antenna Accessories Group OA–1398/GRC		1–5
5820–543–0111	1	Antenna-Filter Group OA–1393/GRC		1–7
5820–543–0107	1	Antenna-Filter Group OA–1397/GRC		1–10
5820–543–0115	1	Antenna Group OA–1389/GRC		1–4
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
5820–776–5406	2	Radio Set Group AN/TRA–25		1–10
5820–856–9911	2	Radio Set Group AN/TRA–25A, AN/TRA–25B		1–11
5820–543–0116	1	Radio Set Group OA–1387/GRC		1–1
5820–082–3214	2	Radio Set Group OA–3668A/TRC–24		1–12
5820–561–6680		Radio Repeater Set AN/GRC–80		
		Consisting of:		
5820–543–0112	3	Amplifier Group OA–1392/GRC		1–6
5820–543–0108	3	Amplifier Group OA–1396/GRC		1–15
5820–566–7945	2	Antenna Accessories Group OA–1398/GRC		1–5
5820–543–0111	2	Antenna-Filter Group OA–1393/GRC		1–7
5820–543–0107	3	Antenna-Filter Group OA–1397/GRC		1–16
5820–543–0115	2	Antenna Group OA–1389/GRC		1–4
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
5820–776–5406	3	Radio Set Group AN/TRA–25		1–10
5820–856–9911	3	Radio Set Group AN/TRA–25A, AN/TRA–25B		1–11
5820–543–0116	3	Radio Set Group OA–1387/GRC		1–1
5820–082–3214	3	Radio Set Group OA–3668A/TRC–24		1–12
5820–578–5451		Radio Set AN/GRC–81		
		Consisting of:		
5820–543–0110	1	Amplifier Group OA–1394/GRC		1–8
5820–566–7945	1	Antenna Accessories Group OA–1398/GRC		1–5
5820–543–0109	1	Antenna-Filter Group OA–1395/GRC		1–9
5820–543–0115	1	Antenna Group OA–1389/GRC		1–4
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
5820–543–0116	1	Radio Set Group OA–1387/GRC		1–1
5820–082–3214	1	Radio Set Group OA–3668A/TRC–24		1–12
5820–578–5451		Radio Set AN/GRC–81		
		Consisting of:		
5820–543–0110	1	Amplifier Group OA–1394/GRC		1–8
5820–566–7945	1	Antenna Accessories Group OA–1398/GRC		1–5
5820–543–0109	1	Antenna-Filter Group OA–1395/GRC		1–9
5820–543–0115	1	Antenna Group OA–1389/GRC		1–4
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
5820–543–0116	1	Radio Set Group OA–1387/GRC		1–1
5820–082–3214	1	Radio Set Group OA–3668A/TRC–24		1–12
5820–578–5452		Radio Repeater Set AN/GRC–83		
		Consisting of:		
5820–566–7945	1	Antenna Accessories Group OA–1398/GRC		1–5
5820–543–0110	2	Amplifier Group OA–1394/GRC		1–8
5820–543–0109	1	Antenna-Filter Group OA–1395/GRC		1–9
5820–543–0115	1	Antenna Group OA–1389/GRC		1–4
5820–543–1282	1	Generator Set Group OA–1675/GRC		1–3
5820–543–1283	1	Power Accessories Group OA–1676/GRC		1–2
5820–543–0116	2	Radio Set Group OA–1387/GRC		1–1
5820–082–3214	3	Radio Set Group OA–3668A/TRC–24		1–12

1-6.1. Expendable Consumable Supplies and Materials

Expendable consumable supplies and materials are listed in table 1-1.

Table 1-1. Expendable Consumable Supplies and Material

The supplies and material listed in this table are required for operation of this equipment and are authorized to be requisitioned by SB 700-50. The FSN for the applicable unit of issue required can be found in appropriate supply catalogs. The FSCM is used as an element in item identification to designate manufacturer or distributor or Government agency, etc., and is identified in SB 708-42.

Item	*Description*	*Ref No. and FSCM*	*FSC*
1	Insulation Tape, Electrical Tape TL-83		5970
2	Insulation Tape, Electrical TL-636/U		5970

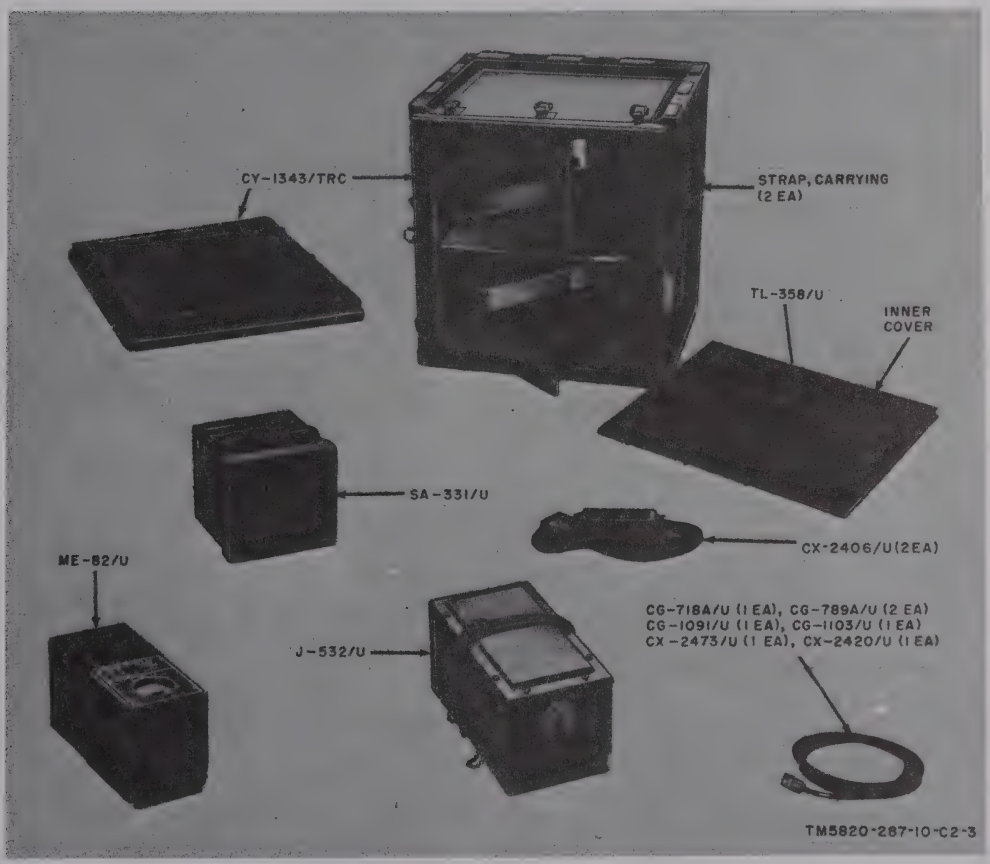


Figure 1-2. Power Accessories Group OA-1676/GRC.

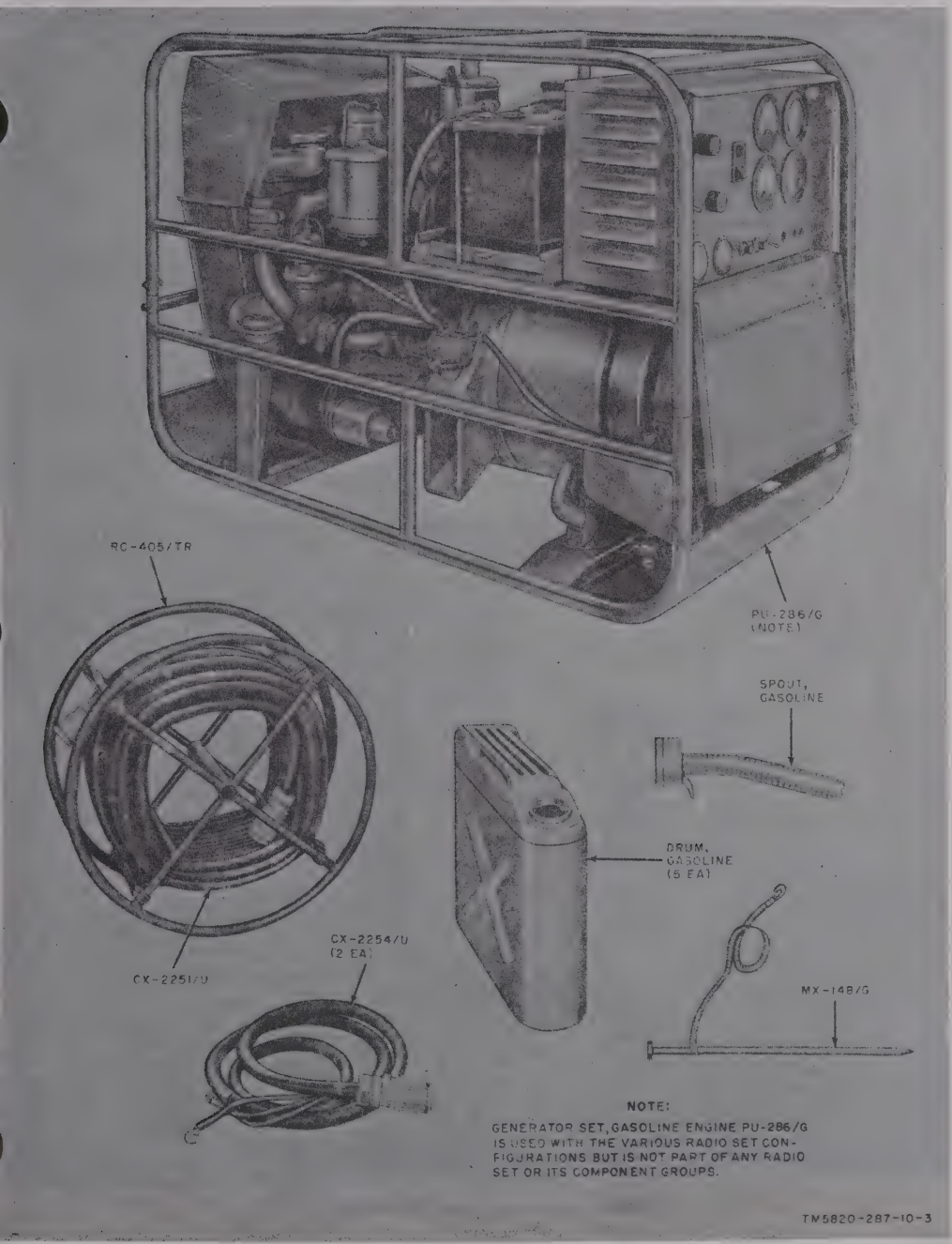


Figure 1–3. Generator Set Group OA–1675/GRC.

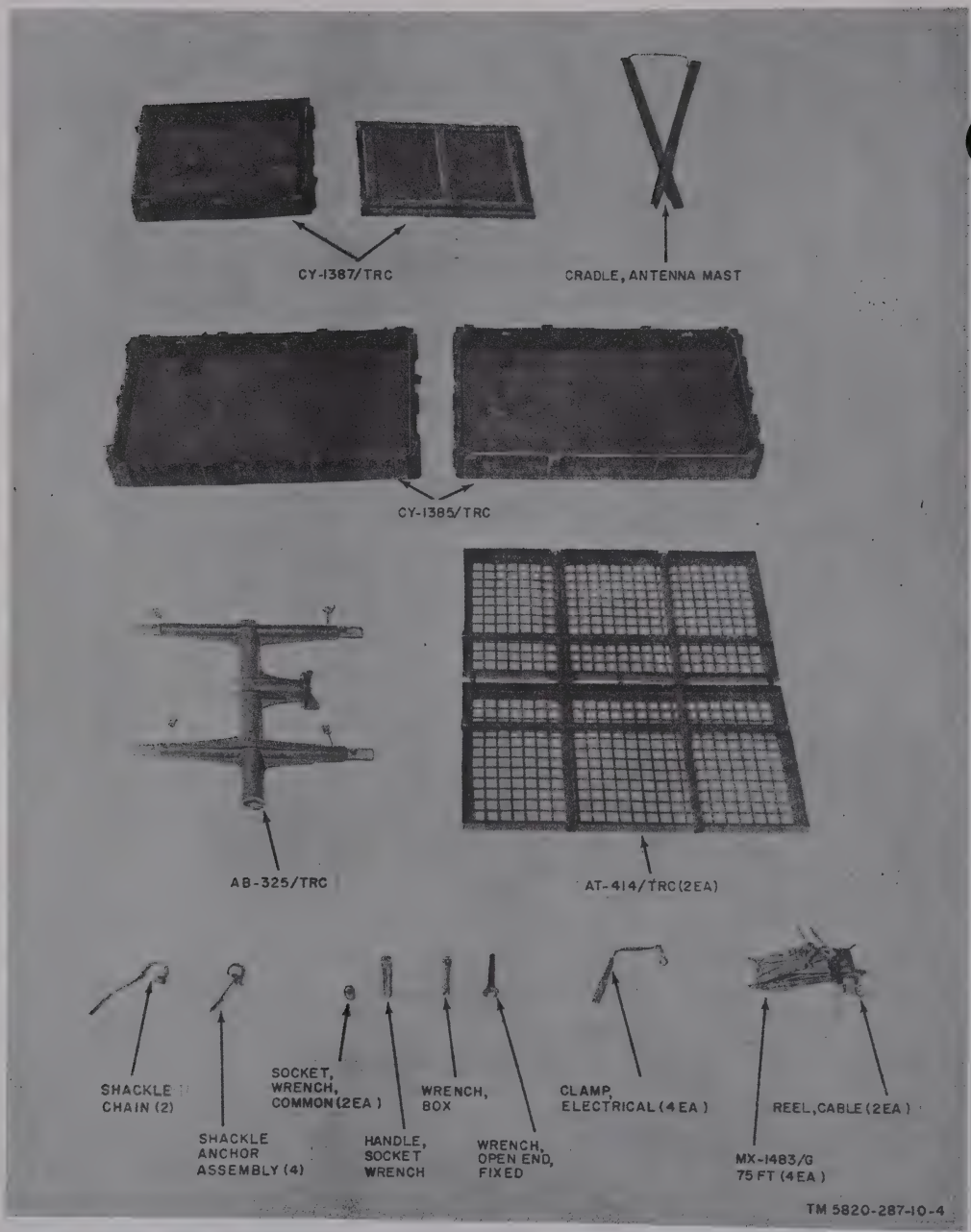


Figure 1–4. Antenna Group OA–1389/GRC.

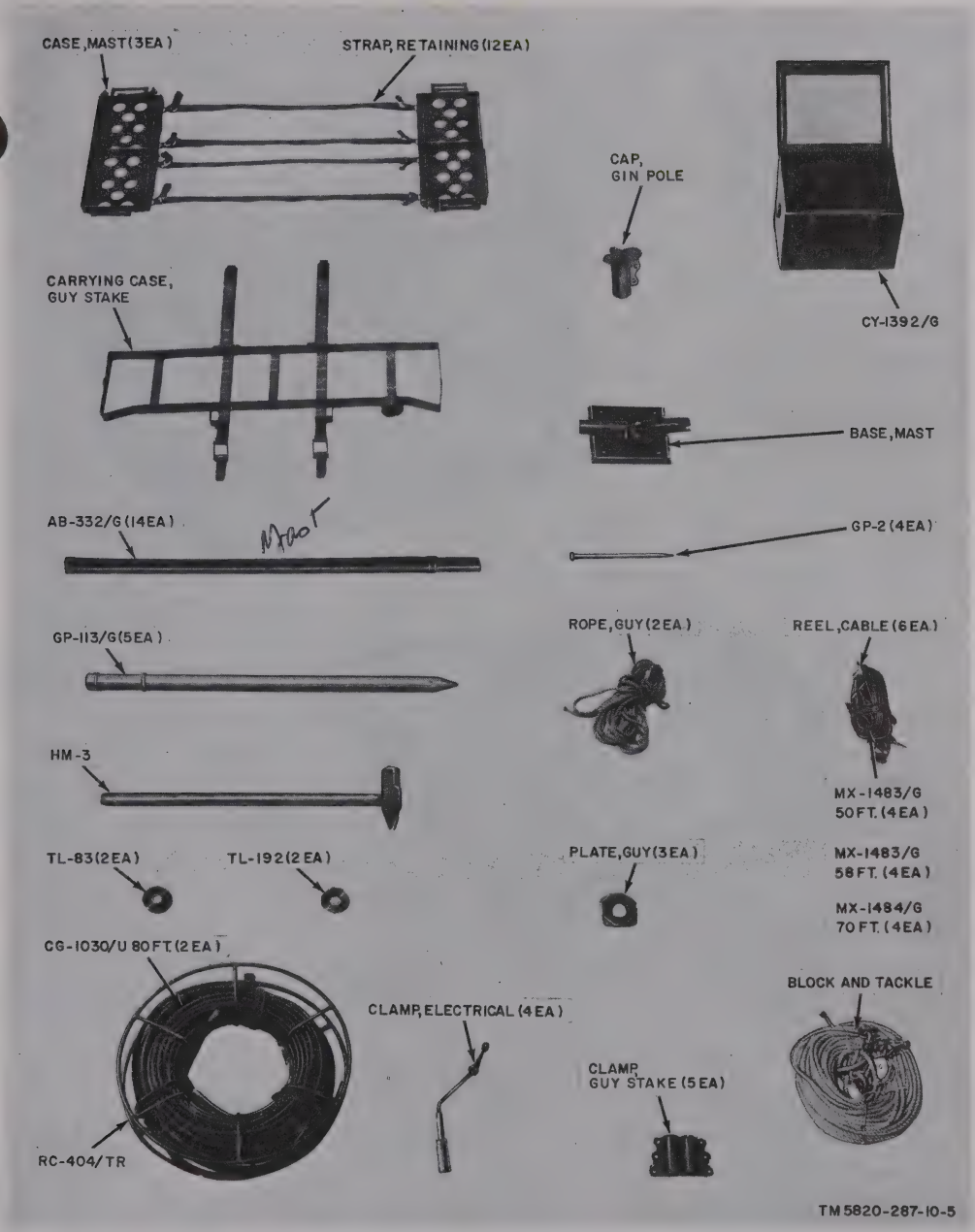


Figure 1–5. Antenna Accessories Group OA–1398/GRC.

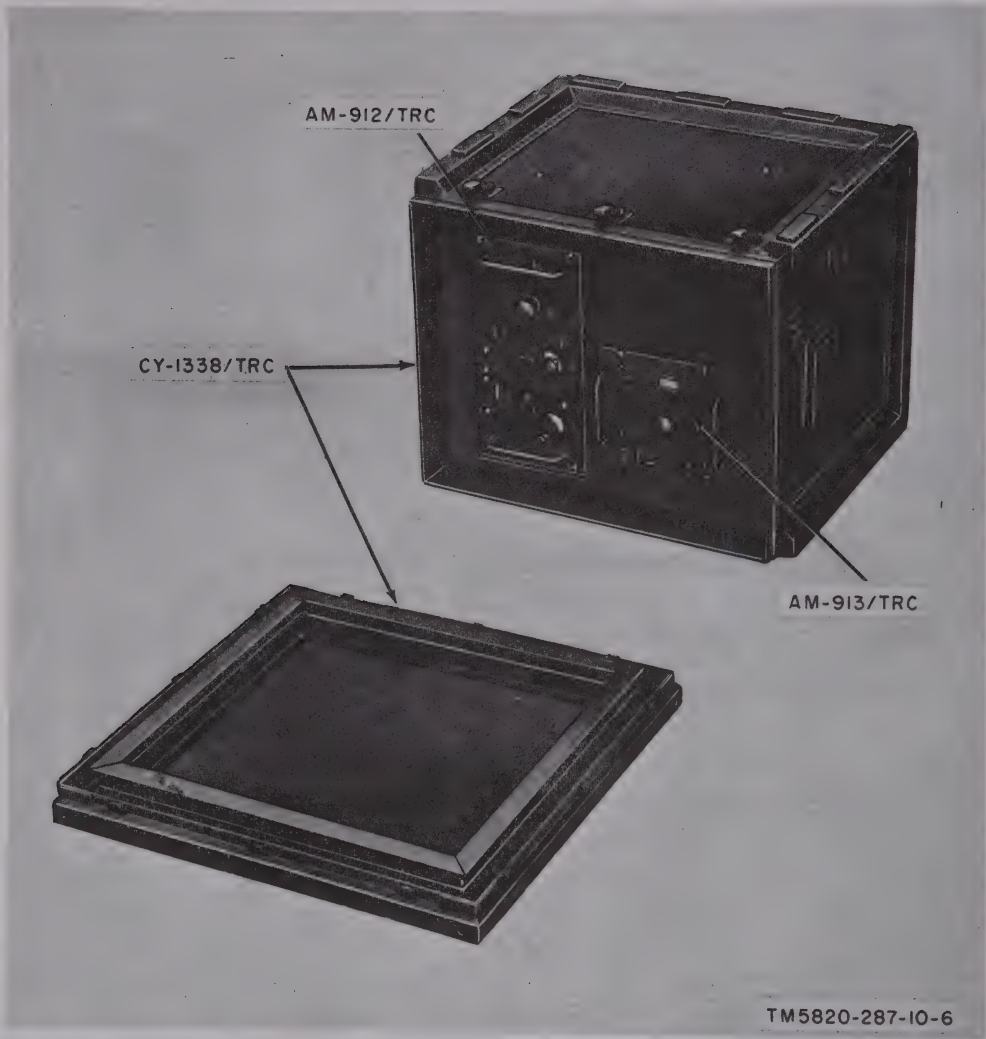


Figure 1-6. Amplifier Group OA-1392/GRC.

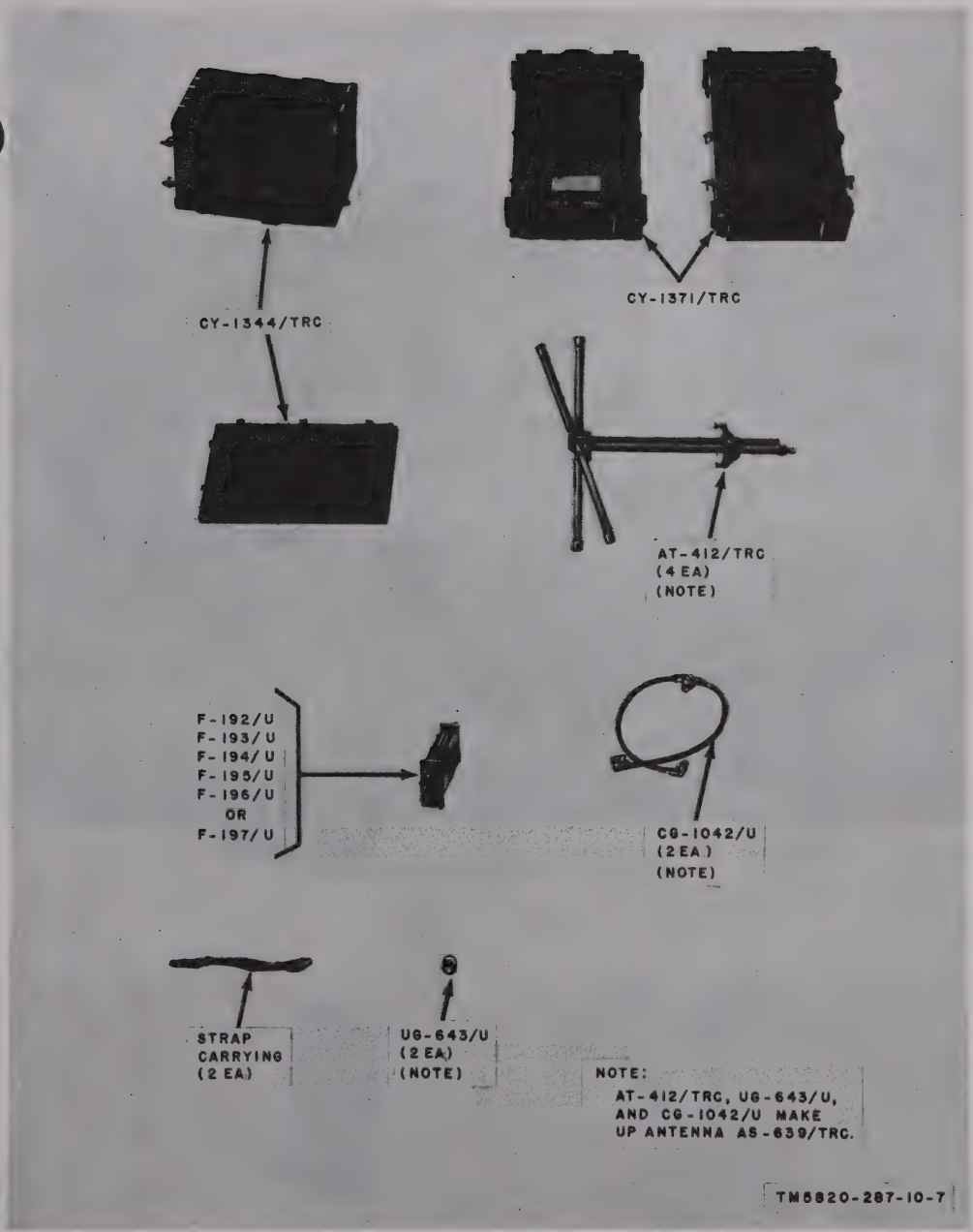


Figure 1-7. Antenna-Filter Group OA-1393/GRC.

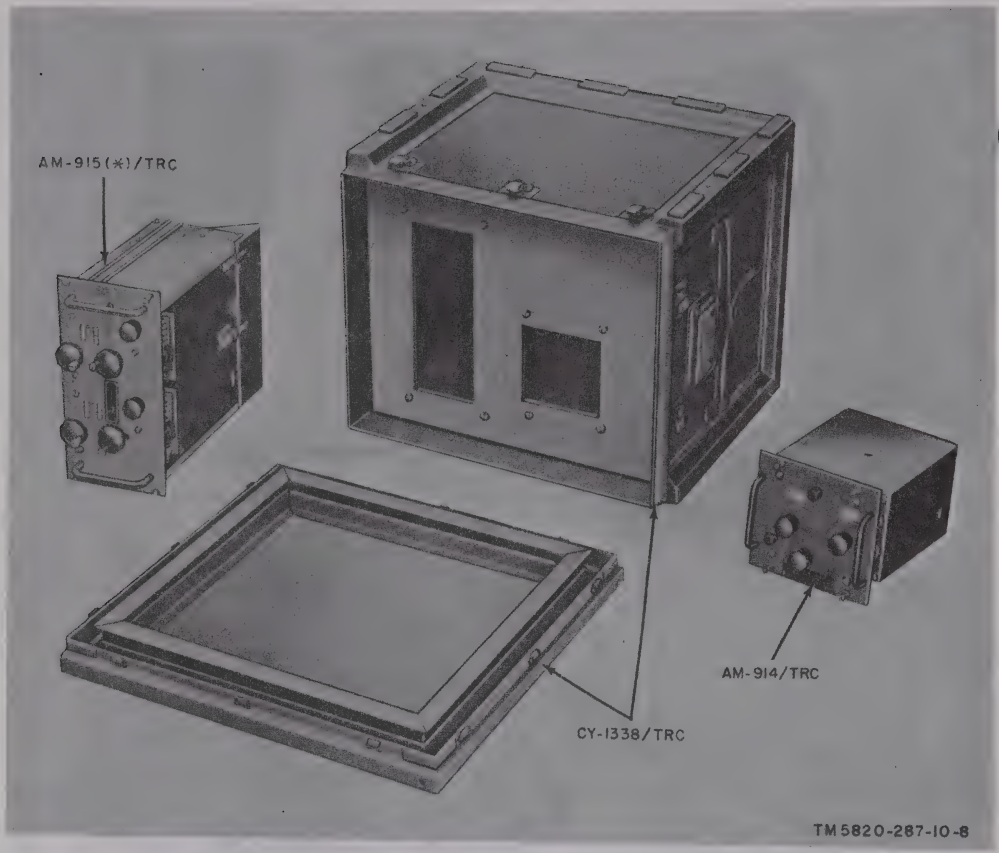


Figure 1-8. Amplifier Group OA-1394/GRC.

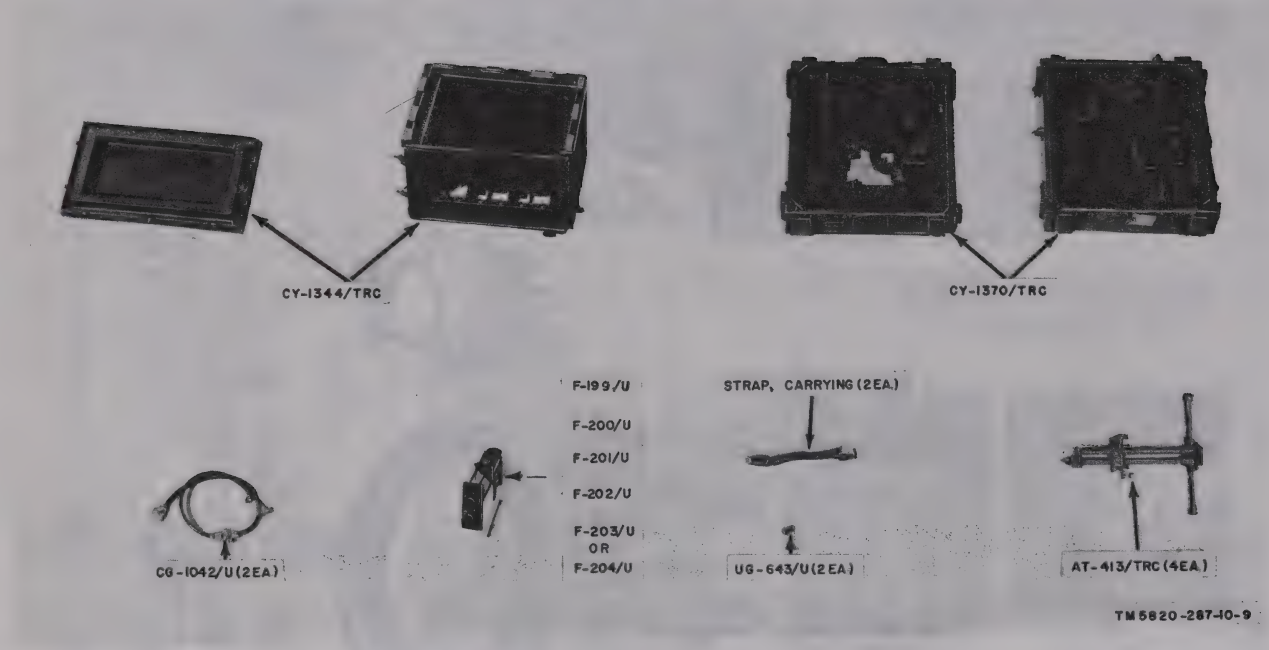


Figure 1–9. Antenna-Filter Group OA–1395/GRC.

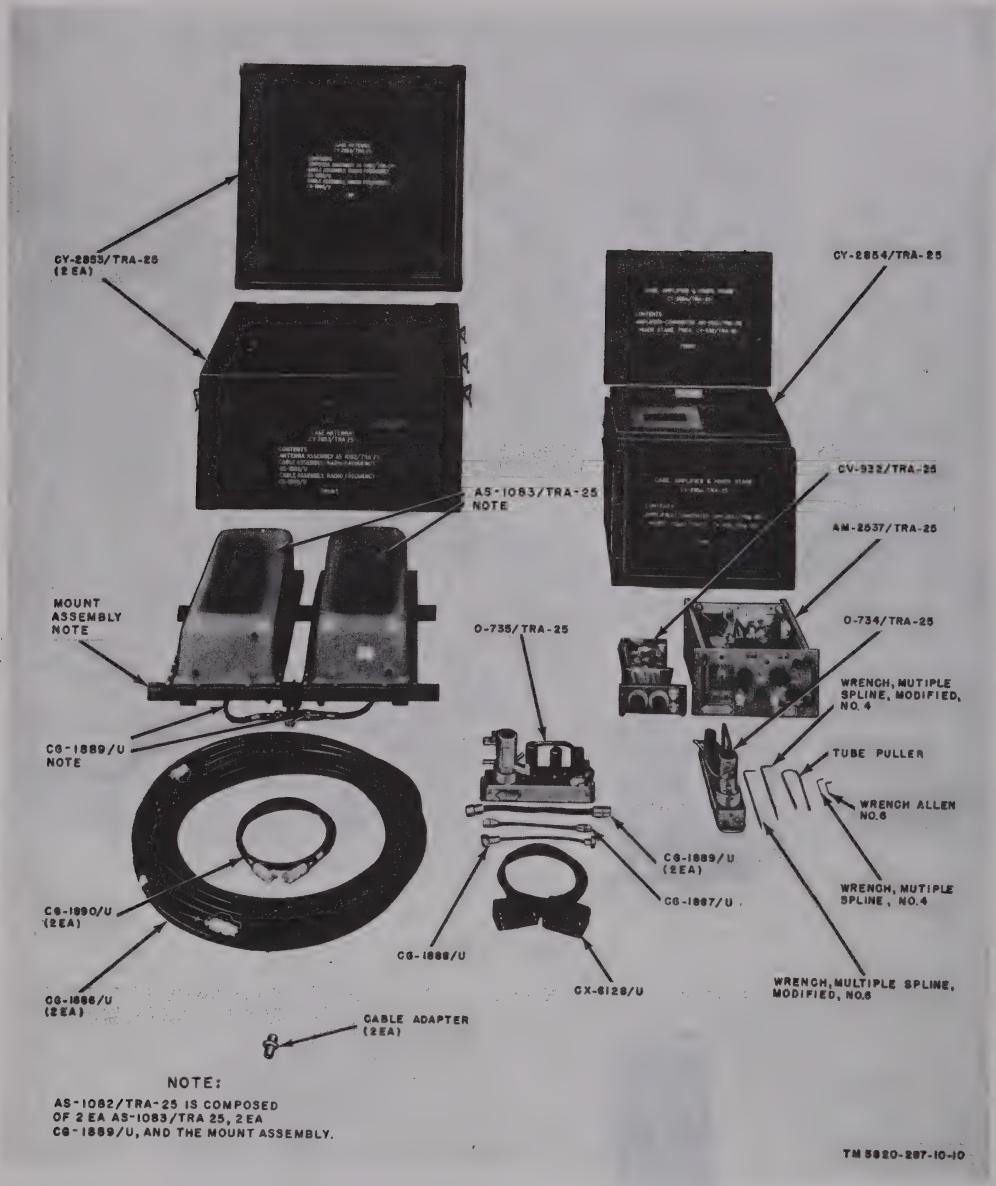


Figure 1–10. Radio Set Group AN/TRA–25 only.

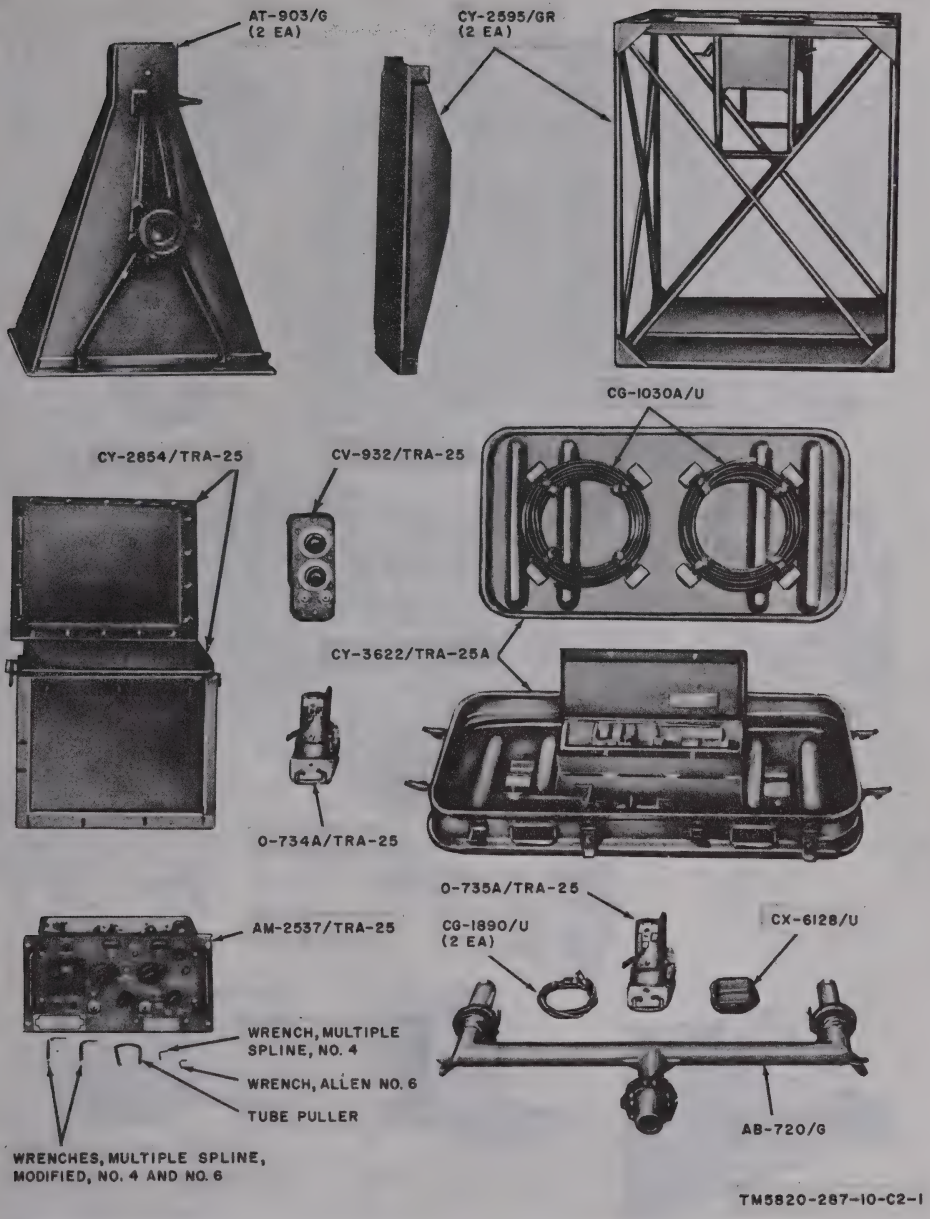


Figure 1-11. Radio Set Group AN/TRA-25A.

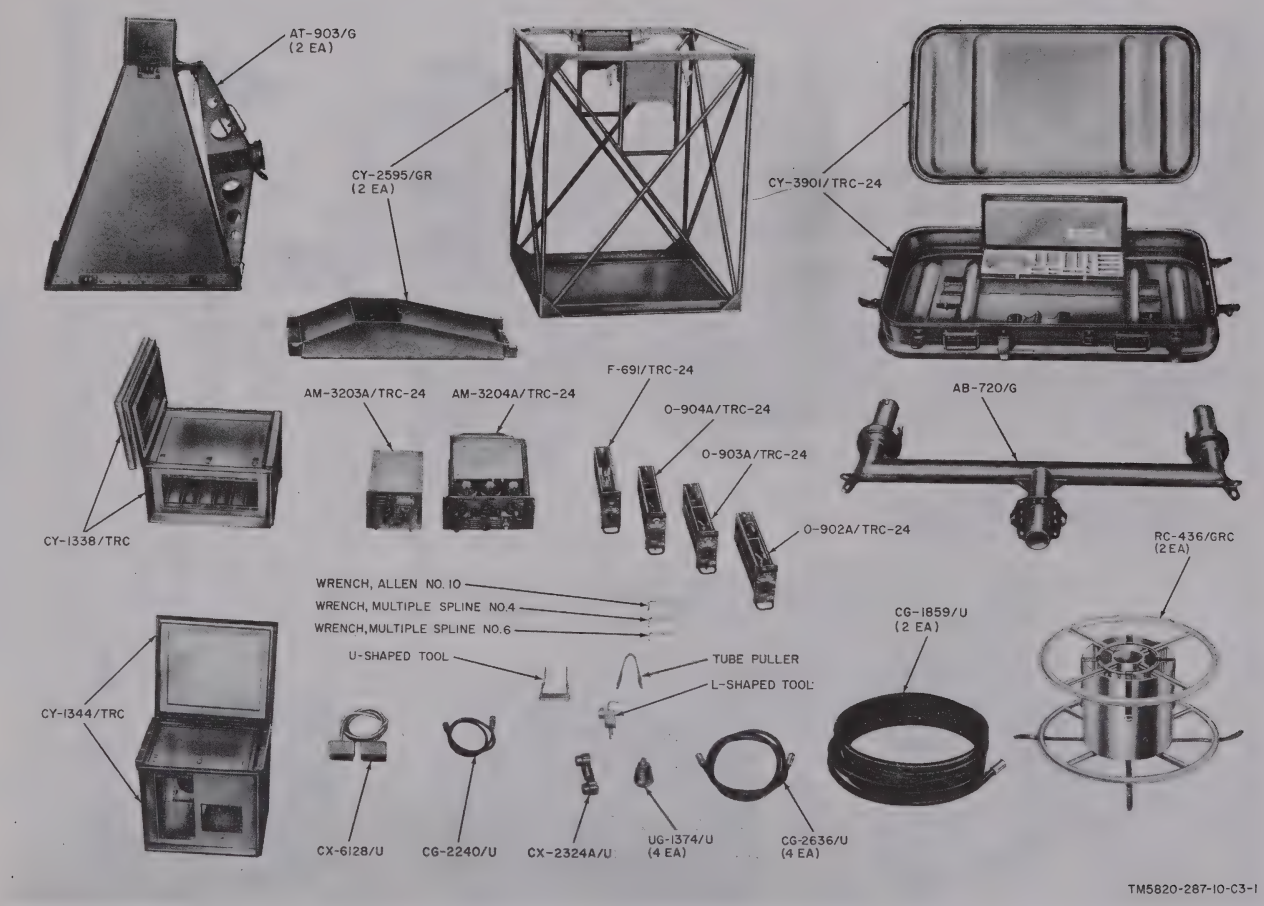


Figure 1-12. Radio Set Group OA-3668A/TRC-24, less running spares.

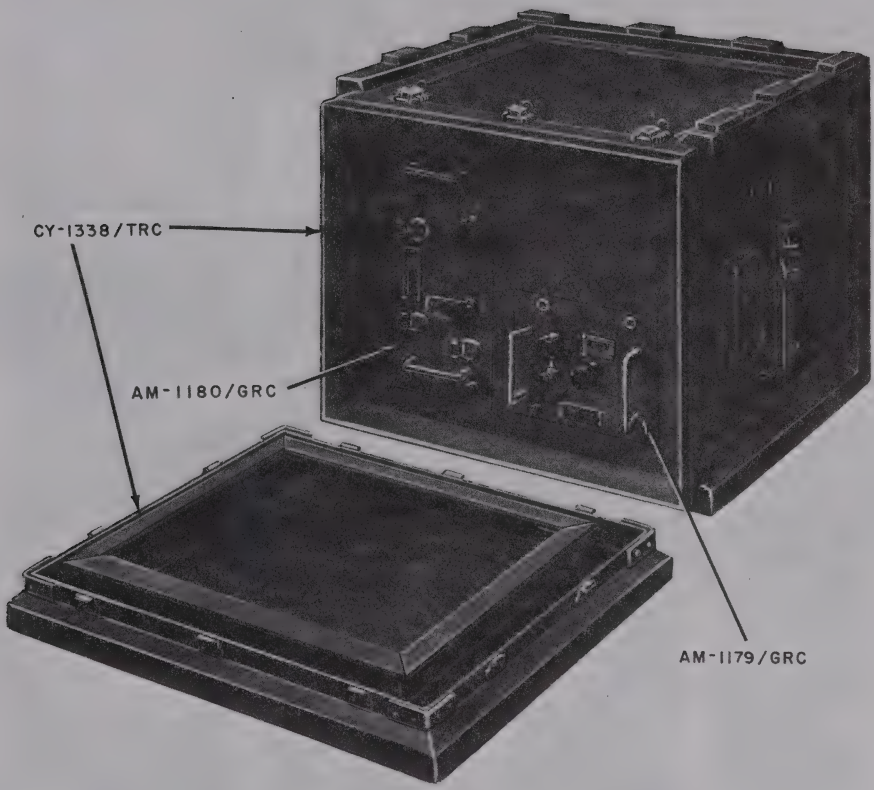


Figure 1-13. Amplifier Group OA-1390/GRC.

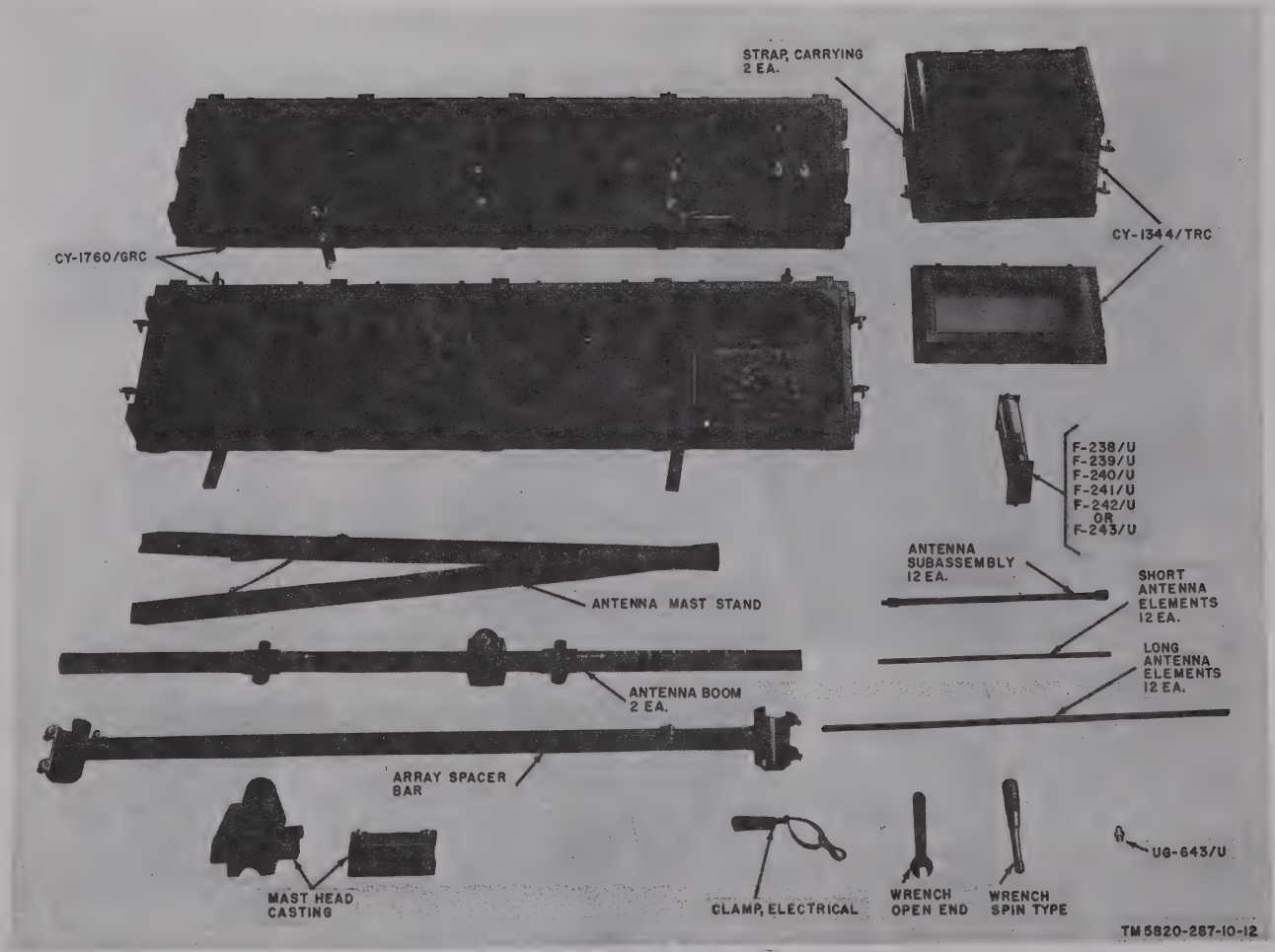


Figure 1-14. Antenna Filter Group OA-1391/GRC.

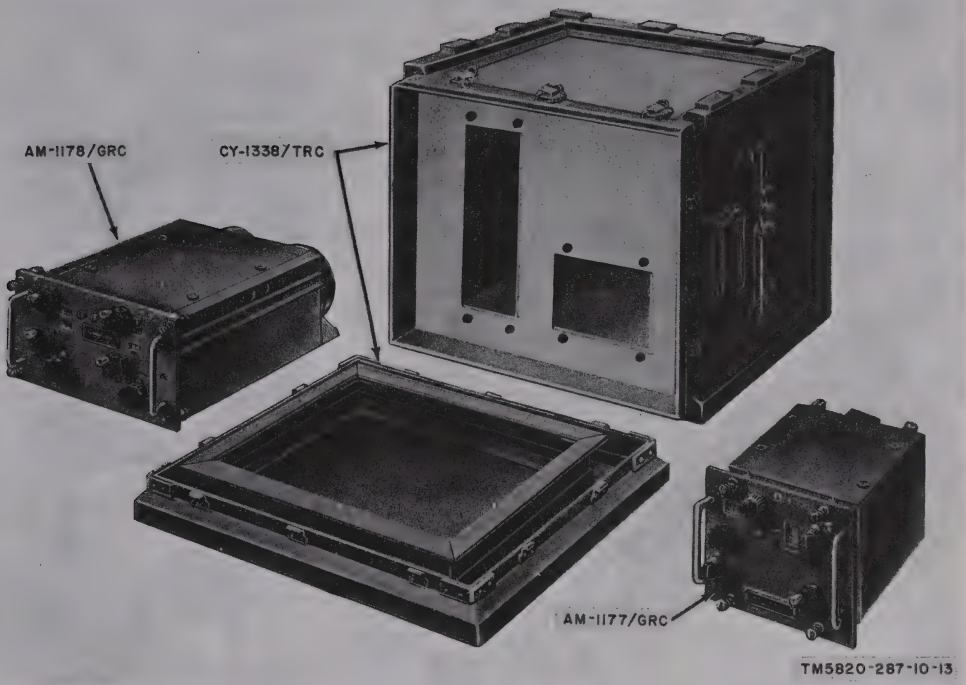


Figure 1–15. Amplifier Group OA–1396/GRC.

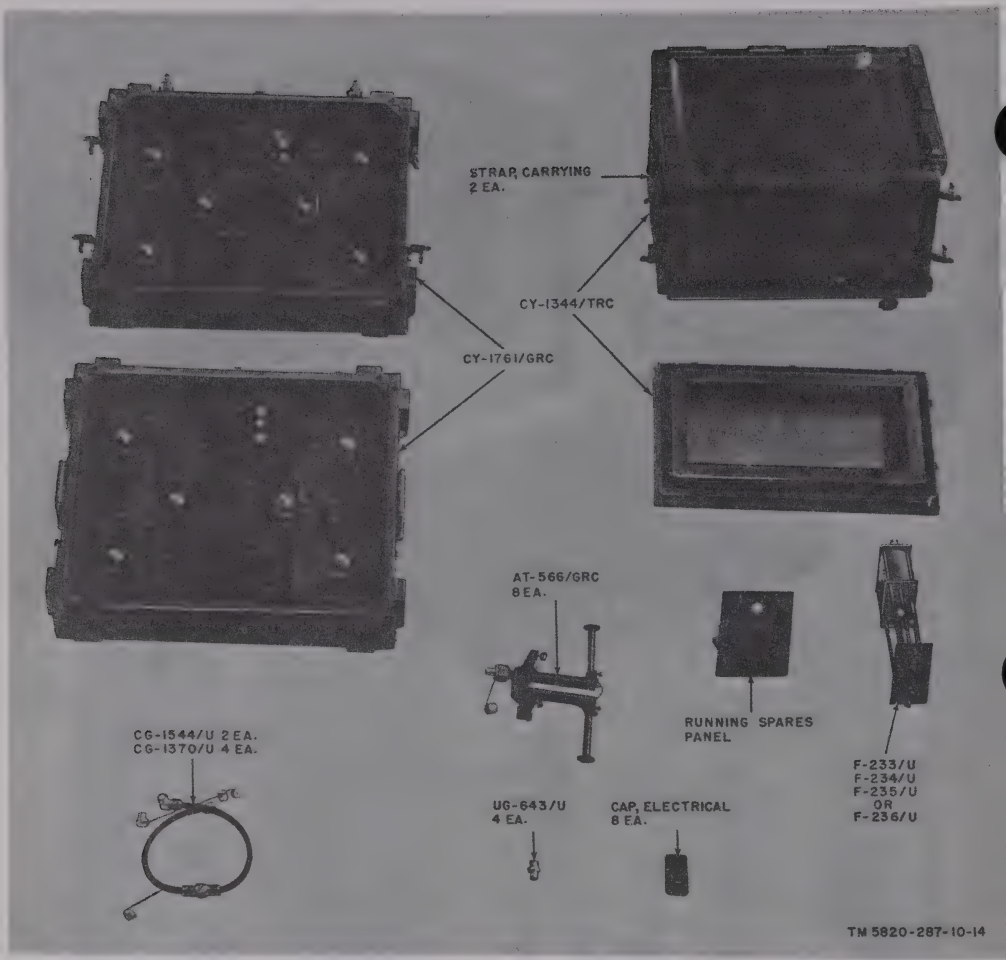
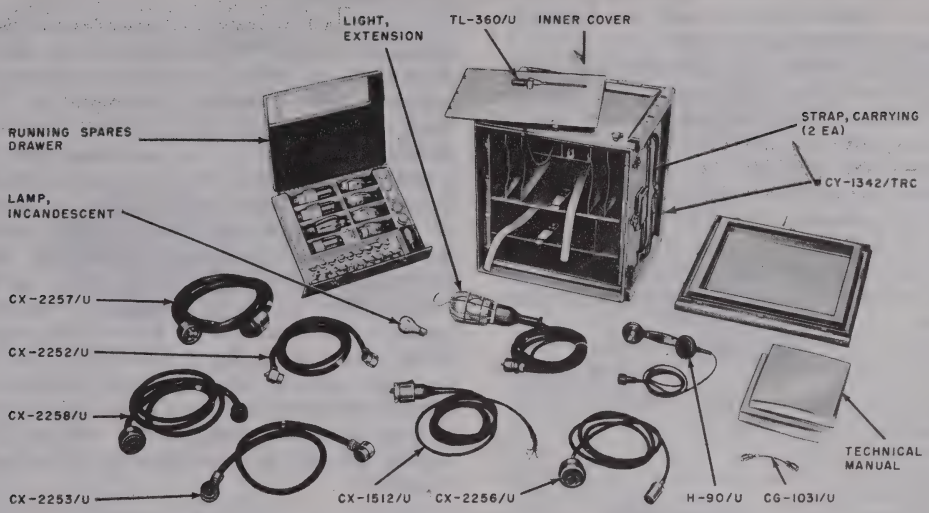
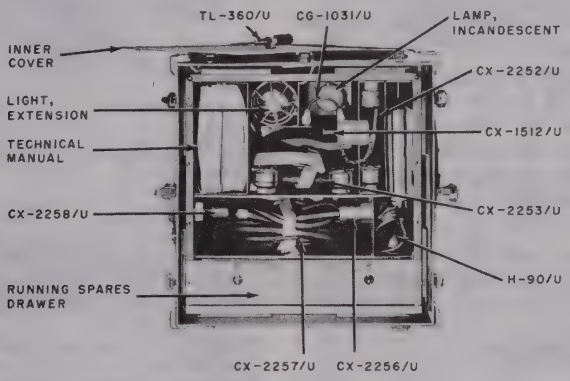


Figure 1-16. Antenna Filter Group OA-1397/GRC.

(Next printed page is 1-45.)



A. COMPONENTS REMOVED FROM CASE, ACCESSORIES CY-1342/TRC



B. COMPONENTS INSTALLED IN CASE, ACCESSORIES CY-1342/TRC

TM5820-287-10-15

Figure 1-17. Accessory Kit MK-133/TRC.

1–7. Description

a. General Information. The radio equipment covered in this manual (para 1–1) consists of a specified number of separately packaged components (para 1–6). Transit cases used to house some of these components are similar. Other cases differ as required for their particular use. The components used to form the various sets are shown in figures 1–1 through 1–17. When a set is arranged for operation, the transit cases containing the components may be stacked as convenient for the particular application. In

some applications, some components of the set may be removed from the cases and installed in specially fabricated mountings.

b. Radio Set Groups AN/TRA–25 and AN/TRA–25A (F-Band) (figs. 1–10 and 1–11). The AN/TRA–25 is used to extend the frequency range of the AN/TRC–24, AN/TRC–35, AN/TRC–36, AN/GRC–78, AN/GRC–79, and AN/GRC–80. Information concerning the AN/TRA–25 is provided in paragraphs 1–5*a*, *b*, *c*, *d*, and *i*; 3–2*e*; 3–3*d*; 3–4*b*(5) 3–4*c*(5); 3–5*d*; 3–6*f*; and 3–8*c*(1). The number of AN/TRA–25's required for each of the above equipments is provided in the chart below.

Equipment	Number of AN/TRA–25's required
AN/TRC–24	1
AN/TRC–35	2
AN/TRC–36	3
AN/GRC–78	1
AN/GRC–79	2
AN/GRC–80	3

c. Radio Set Group OA–3668A/TRC–24 (J-Band) (fig. 1–12). The OA–3668A/TRC–24 is a heterodyne converter used to extend the frequency range of any of the radio equipment sets for communication from 1,350 to 1,875 megacycles per second. The number of OA–3668A/TRC–24's required for each radio equipment set is provided in the chart below. Additional information concerning the OA–3668A/TRC–24 is provided in paragraphs 1–5*a*, *b*, *c*, *d*, *i*; 3–2*f* and *g*; 3–3*e*; 3–4*b*(6); 3–4*c*(6); 3–5*p*; 3–6*g*; and 3–8*c*(1).

Equipment	Number of OA–3668A/TRC–24's required
AN/TRC–24	1
AN/TRC–35	2
AN/TRC–36	3
AN/GRC–75	1
AN/GRC–76	2
AN/GRC–77	3
AN/GRC–78	1
AN/GRC–79	2
AN/GRC–80	3
AN/GRC–81	1
AN/GRC–82	2
AN/GRC–83	3

1–8. Application

A radio section (para 1–4) includes two radio terminals and may or may not include one or more radio repeaters. Many factors determine the range between terminals and repeaters. The nature of the terrain, the frequency band employed, the height of the antennas, and the atmospheric conditions are some of the factors. Information on radio system planning and layout is contained in TM 11–486–6. Under normal conditions, a range of approximately 30 miles between sets can be considered average (A, fig. 1–21). When the A and B sections of the radio repeater are located more than a mile apart, carrier repeaters (A, fig. 1–22) must be used to overcome possible excessive signal attenuation. When it is necessary to use a radio repeater as a dropoff, carrier terminals (B, fig. 1–22) must be located between the two sections of the radio repeater.

1–9. Differences in Models

Differences	AN/TRA–25	AN/TRA–25A
Antenna AT–903/G	Not included	Included.
Support, Antenna AB–720/G.	Not included	Included.
Case, Antenna CY–2595/GR.	Not included	Included.
Cable Assembly, Radio Frequency CG–1030A/U (80 ft).	Not included	Included.
Oscillator-Multiplier O–734A/TRA–25.	Not included	Included.
Oscillator-Multiplier O–735A/TRA–25.	Not included	Included.
Case, Accessories, CY–3622/TRA–25A.	Not included	Included.
Oscillator-Multiplier O–734/TRA–25.	Included	Not included.
Oscillator-Multiplier O–735/TRA–25.	Included	Not included.
Case, Antenna CY–2853/TRA–25.	Included	Not included.
Antenna Assembly AN–1083/TRA–25.	Included	Not included.
Cable Assembly, Radio Frequency CG–1886/U (80 ft.).	Included	Not included.
Crystal CR–51/U	Included	Not included.
Crystal CR–52/U	Not included	Included.
Cable Adapter	Included	Not included.

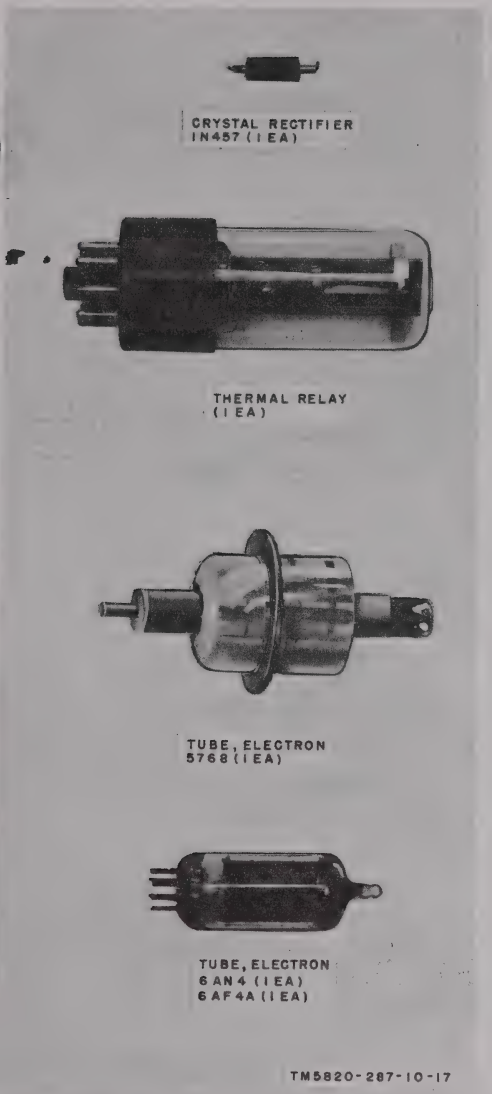


Figure 1-18. Thermal relay, crystal rectifier 1N457, and electron tubes 5768 and 6AF4A.

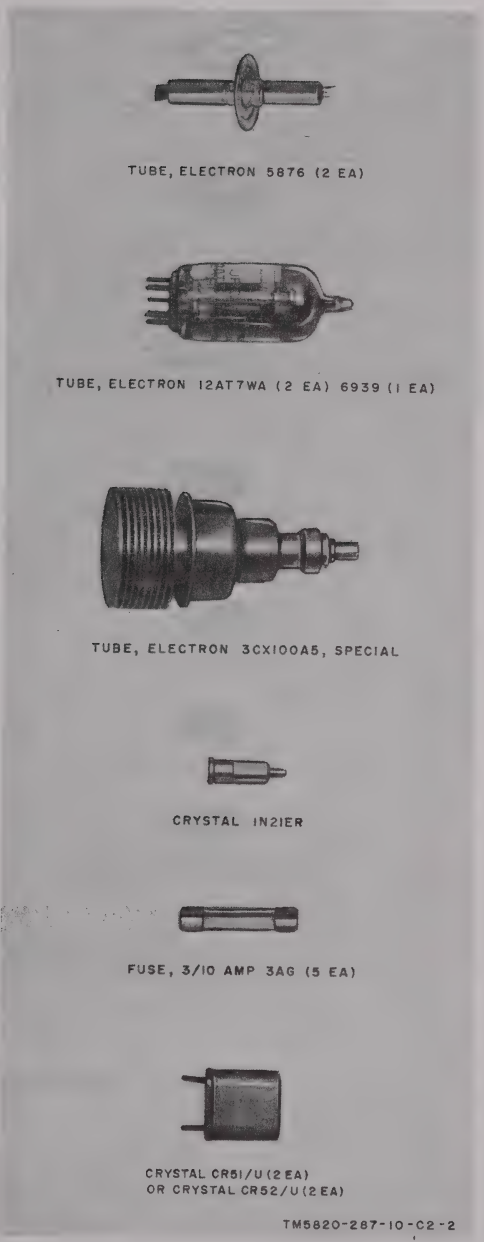

TUBE, ELECTRON 5876 (2 EA)
TUBE, ELECTRON 12AT7WA (2 EA) 6939 (1 EA)
TUBE, ELECTRON 3CX100A5, SPECIAL
CRYSTAL 1N21ER
FUSE, 3/10 AMP 3AG (5 EA)
CRYSTAL CR51/U (2 EA)
OR CRYSTAL CR52/U (2 EA)
TM5820-287-10-C2-2

Figure 1-19. Radio Set Group AN/TRA-25 running spares less Antenna AS-1083/TRA-25 or Radio Set Group AN/TRA-25A running spares.

Figure 1-20. Radio Set Group OA-3668A/TRC-24, running spares.

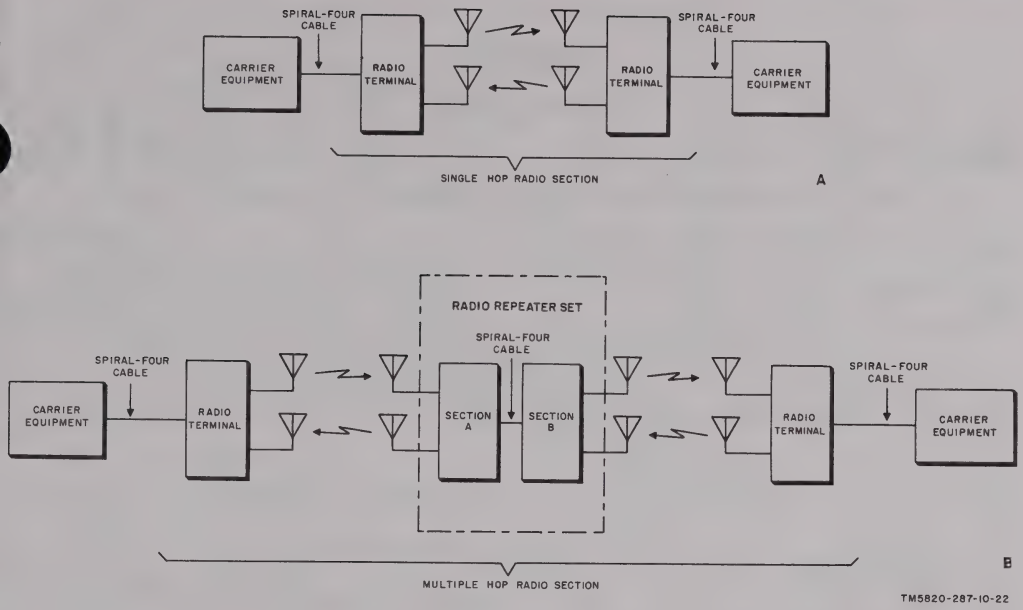


Figure 1–21. Typical radio section application in carrier system.

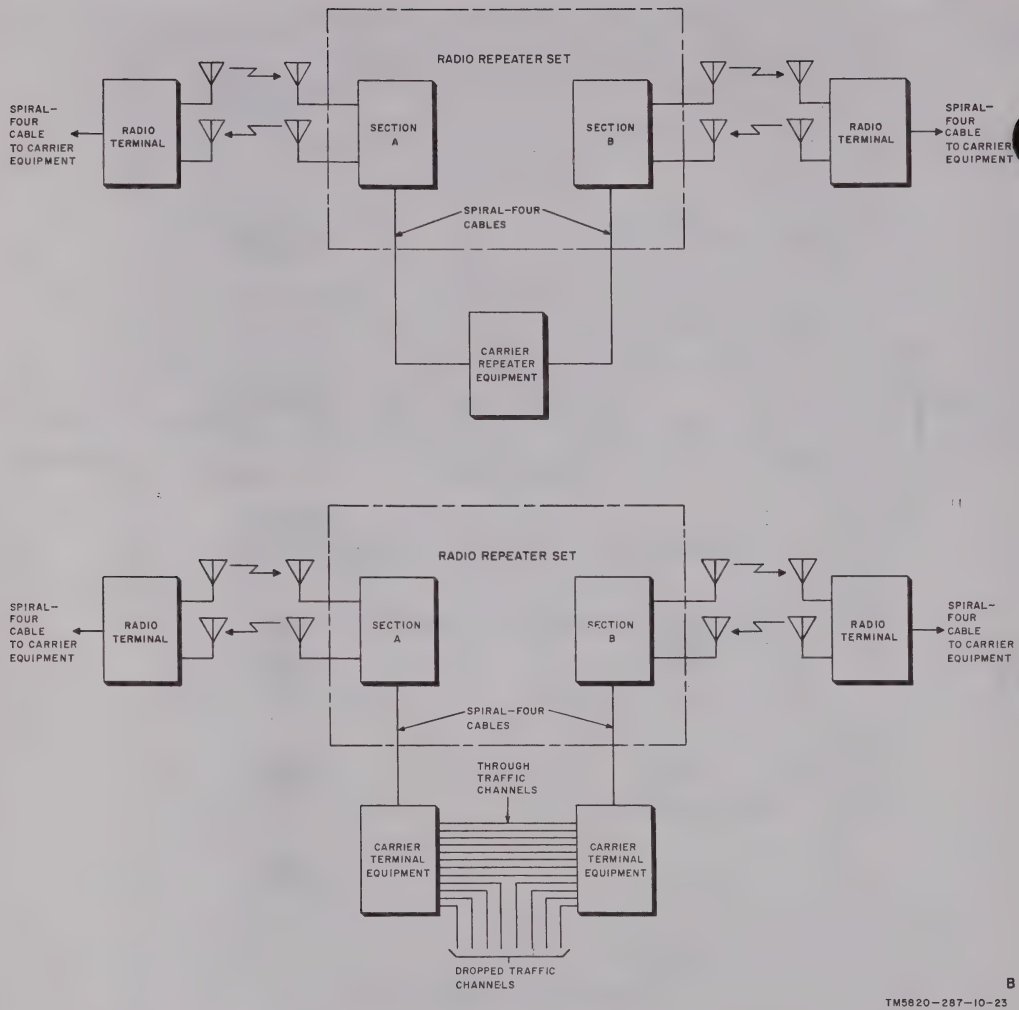


Figure 1-22. Typical radio section applications in carrier system with carrier equipment between radio repeater sets.

CHAPTER 2
INSTALLATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Siting

An equipment site should be an open and level area (preferably an elevated area), away from obstructions such as trees, buildings, or cliffs. Figure 2-1 illustrates good and bad locations for transmission and reception. Observe the following considerations when selecting an equipment site:

a. Select flat cleared terrain.

b. Be sure that conditions are suitable for anchoring the antenna system.

c. Locate the site as far away as possible from buildings, roads, and powerlines.

d. Be sure that the site is accessible for transporting equipment and supplies such as gasoline, water, oil, and food.

e. Be sure sufficient area is available for the antenna installation. The minimum requirements are listed in the chart below.

Note. Two antenna installations are required at a radio repeater site. Two antenna installations are also required for a double-stacked A-band antenna system at a radio terminal site.

Number of antenna installations	Area dimensions (ft)
1	80 x 100
2	210 x 100
4	420 x 100

Figure 2–1. Good and bad siting locations.

2-2. Unpacking

a. Packaging Data.[a]

(1) *Radio Set AN/TRC-24.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅜	21⅝	22½	5.2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15½	31¼	31¼	8.5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅜	18¾	21¼	2.9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	9	Case, mast	5½	18¾	71	3.7	98
	10	Case, mast	5½	18¾	71	3.7	98
	11	Case, mast	5½	18¾	71	3.7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103
Antenna Group OA-1389/GRC	13	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅛	4.5	75
	14	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13.1	137
ntenna Filter Group OA-1393/GRC (B-band).	15	Case, Antenna CY-1371/TRC	10½	18⅛	29¾	3.3	84
	16	Case, Accessories CY-1344/TRC	18⅜	13⅛	21	2.9	72
Antenna Filter Group OA-1395/GRC (C-band).	17	Case, Accessories CY-1344/TRC	18⅜	13⅛	21	2.9	72
	18	Case, Antenna CY-1370/TRC	10⅛	22½	25⅛	3.6	73
Amplifier Group OA-1394/GRC (C-band).	19	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
Amplifier Group OA-1392/GRC (B-band).	20	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
Radio Set Group OA-1387/GRC	21	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	22	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	23	Case, Power Supply CY-1340/TRC	18¾	18½	21	4.2	133
	24	Case, Accessories CY-1342/TRC	18⅜	21⅝	22½	5.2	118
	25	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66

[a]These tables contain typical packaging data.

(2) *Radio Set AN/GRC-75.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/GRC	18⅝	21⅝	22½	5. 2	1
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15½	31¼	31¼	8. 5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12. 5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	8	Carrying case, guy stake	5⅞	20½	51¼	3. 6	140
	9	Case, mast	5½	18¾	71	3. 7	98
	10	Case, mast	5½	18¾	71	3. 7	98
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Antenna Filter Group OA-1391/GRC (A-band).	13	Case, Antenna CY-1760/GRC	10⅝	20¼	77¾	9. 6	165
	14	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
Amplifier Group OA-1390/GRC (A-band).	15	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Radio Set Croup OA-1387/GRC	16	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	12
	17	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	10
	18	Case, Power Supply CY-1340/TRC	18¾	18½	21	4. 2	133
	19	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	20	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66

(3) *Radio Set AN/GRC-78.*

Component groups	Case No.	Contents	Dimensions (In.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅝	21⅝	22½	5. 2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8. 5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¼	¾	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12. 5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	9	Case, mast	5½	18¾	71	3. 7	98
	10	Case, mast	5½	18¾	71	3. 7	98
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Amplifier Group OA-1392/GRC (B-band).	13	Case, Standardized Components, Electrical CY-338/TRC.	18⅝	17⅞	21¼	4. 1	44
Amplifier Group OA-1396/GRC (D-band).	14	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Antenna Filter Group OA-1397/GRC (D-band).	15	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
	16	Case, Antenna CY-1761/TRC	10⅝	22¾	25⅞	3. 6	73
Antenna Group OA-1389/GRC	17	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4. 5	75
	18	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13. 1	137
Radio Set Group OA-1387/GRC	19	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	122
	20	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	100
	21	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4. 2	133
	22	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	23	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66
Antenna Filter Group OA-1393/GRC (B-band).	24	Case, Antenna CY-1371/TRC	10½	18⅛	29¾	3. 3	84
	25	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72

(4) *Radio Set AN/GRC–81 or AN/GRC–81A.*

Component groups	Case No.	Contents	Dimensions (In.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA–1676/GRC.	1	Case, Accessories CY–1343/TRC	18⅝	21⅞	22½	5. 2	14
Generator Set Group OA–1675/GRC.	2	Reel, Cable RC–405/TR	15⅛	31¼	31¼	8. 5	181
	5	Ground Rod MX–148/G (2 ea)	72	1¾	¾	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12. 5	140
Antenna Accessories Group OA–1398/GRC.	7	Case, Accessories CY–1392/G	12⅝	18¾	21¼	2. 9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	9	Case, mast	5½	18¾	71	3. 7	98
	10	Case, mast	5½	18¾	71	3. 7	98
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Reel, Cable RC–404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Antenna Group OA–1389/GRC	13	Case, Antenna Reflector Support CY–1387/TRC.	7½	30¼	34⅜	4. 5	75
	14	Case, Antenna Reflector CY–1385/TRC.	13	34¼	51¾	13. 1	137
Radio Set Group OA–1387/GRC or AN/GRC–81A.	15	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5. 2	12
	16	Case, Receiver CY–1339/TRC	18½	18	21	4. 1	100
	17	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4. 2	133
	18	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5. 2	118
	19	Transformer, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅞	1. 9	66
Amplifier Group OA–1394/GRC (C-band).	20	Case, Standardized Components, Electrical CY–1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Antenna Filter Group OA–1395/GRC (C-band).	21	Case, Accessories CY–1344/TRC	18⅝	13⅛	21	2. 9	72
	22	Case, Antenna CY–1370/TRC	10⅛	22½	25⅛	3. 6	73

(5) *Radio Terminal Set AN/TRC-35.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/GRC	18⅝	21⅝	22½	5. 2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8. 5	181
	5	Ground Rod MX-148/G (2 ea)	¾	1¼	72	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21⅛	29¾	12. 5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	9	Case, mast	5½	18¾	71	3. 7	98
	10	Case, mast	5½	18¾	71	3. 7	98
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Antenna Group OA-1389/GRC	13	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4. 5	75
	14	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13. 1	137
Antenna Filter Group OA-1393/GRC (B-band).	15	Case, Antenna CY-1371/TRC	10½	18⅛	29¾	3. 3	84
	16	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
Antenna Filter Group OA-1395/GRC (C-band).	17	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
	18	Case, Antenna CY-1370/TRC	10⅛	22½	25⅛	3. 6	73
Amplifier Group OA-1394/GRC (C-band).	19	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	20	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Amplifier Group OA-1392/GRC (B-band).	21	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	22	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Radio Set Group OA-1387/GRC	23	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	122
	24	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	122
	25	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	100
	26	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	100
	27	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4. 2	133
	28	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4. 2	133
	29	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	30	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	31	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66
	32	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66

(6) *Radio Terminal Set AN/GRC-76.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅜	21⅝	22½	5.2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8.5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	9	Case, mast	5½	18¾	71	3.7	98
	10	Case, mast	5½	18¾	71	3.7	98
	11	Case, mast	5½	18¾	71	3.7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.8	103
Antenna Filter Group OA-1391/GRC (A-band).	13	Case, Antenna CY-1760/GRC	10⅝	20¼	77¾	9.6	165
	14	Case, Accessories CY-1344/TRC	18⅜	13⅛	21	2.9	72
Amplifier Group OA-1390/GRC (A-band).	15	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
	16	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
Radio Set Group OA-1387/GRC	17	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	18	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	19	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	20	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	21	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	22	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	23	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	24	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	25	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	26	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66

(7) *Radio Terminal Set AN/GRC-79.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅝	21⅝	22½	5.2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8.5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	9	Case, mast	5½	18¾	71	3.7	98
	10	Case, mast	5½	18¾	71	3.7	98
	11	Cast, mast	5½	18¾	71	3.7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103
Amplifier Group OA-1392/GRC (B-band).	13	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
	14	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
Amplifier Group OA-1396/GRC (D-band).	15	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
	16	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
Antenna Group OA-1389/GRC	17	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4.5	75
	18	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13.1	137
Antenna Filter Group OA-1397/GRC (D-band).	19	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2.9	72
	20	Case, Antenna CY-1761/TRC	10⅝	22¾	25⅞	3.6	73
Radio Set Group OA-1387/GRC	21	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	22	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	23	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	24	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	25	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	26	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	27	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	28	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	29	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	30	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
Antenna Filter Group OA-1393/GRC (B-band).	31	Case, Antenna CY-1371/TRC	10½	8⅛	29¾	3.3	84
	32	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2.9	72

(8) *Radio Terminal Set AN/GRC-82.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/GRC	18⅝	21⅝	22½	5. 2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8. 5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12. 5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	8	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	9	Case, mast	5½	18¾	71	3. 7	98
	10	Case, mast	5½	18¾	71	3. 7	98
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Antenna Group OA-1389/GRC	13	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4. 5	75
	14	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13. 1	137
Radio Set Group OA-1387/GRC	15	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	122
	16	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5. 2	122
	17	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	100
	18	Case, Receiver CY-1339/TRC	18½	18	21	4. 1	100
	19	Case, Power Supply CY-1340/TRC	18¾	18½	21	4. 2	133
	20	Case, Power Supply CY-1340/TRC	18¾	18½	21	4. 2	133
	21	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	22	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5. 2	118
	23	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66
	24	Transformer, Power, Fixed, Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1. 9	66
Amplifier Group OA-1394/GRC (C-band).	25	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	26	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Antenna Filter Group OA-1395/GRC (C-band).	27	Case, Accessories CY-1344/TRC	18⅝	13¼	21	2. 9	72
	28	Case, Antenna CY-1370/TRC	10⅛	22½	25⅛	3. 6	73

(9) *Radio Relay Set AN/TRC-36.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1341/GRC	18⅝	21⅛	22½	5. 2	145
Generator Set Group OA-1675/GRC	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8. 5	191
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0. 05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12. 5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	8	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2. 9	140
	9	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	10	Carrying case, guy stake	5⅞	20½	51½	3. 6	140
	11	Case, mast	5½	18¾	71	3. 7	98
	12	Case, mast	5½	18¾	71	3. 7	98
	13	Case, mast	5½	18¾	71	3. 7	98
	14	Case, mast	5½	18¾	71	3. 7	98
	15	Case, mast	5½	18¾	71	3. 7	98
	16	Case, mast	5½	18¾	71	3. 7	98
	17	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
	18	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5. 3	103
Antenna Group OA-1389/GRC	19	Case, Antenna Reflector Support CY-1387/GRC.	7½	30¼	34⅜	4. 5	75
	20	Case, Antenna Reflector Support CY-1387/GRC.	7½	30¼	34⅜	4. 5	75
	21	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13. 1	137
	22	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13. 1	137
Antenna Filter Group OA-1393/GRC (B-band).	23	Case, Antenna CY-1371/TRC	10½	18⅛	29¾	3. 3	84
	24	Case, Antenna CY-1371/TRC	10½	18⅛	29¾	3. 3	84
	25	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
	26	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
Antenna Filter Group OA-1395/GRC (C-band).	27	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2. 9	72
	28	Case, Antenna CY-1380/TRC	10⅛	22½	25⅛	3. 6	73
Amplifier Group OA-1394/GRC (C-band).	29	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	30	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	31	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
Amplifier Group OA-1392/GRC (B-band).	32	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	33	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44
	34	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4. 1	44

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Radio Set Group OA-1387/GRC	35	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	36	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	37	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	38	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	39	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	40	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	41	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	42	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	43	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	44	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	45	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	46	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	47	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	48	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	49	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66

(10) *Radio Repeater Set AN/GRC-77.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅝	21⅝	22½	5.2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¼	8.5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	8	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	9	Carrying case, guy stake	5⅛	20½	51½	8.6	140
	10	Carrying case, guy stake	5⅛	20½	51½	3.6	140
	11	Case, mast	5½	18¾	71	3.7	98
	12	Case, mast	5½	18¾	71	3.7	98
	13	Case, mast	5½	18¾	71	3.7	98
	14	Case, mast	5½	18¾	71	3.7	98
	15	Case, mast	5½	18¾	71	3.7	98
	16	Case, mast	5½	18¾	71	3.7	98
	17	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103
	18	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Antenna Filter Group OA–1391/GRC (A-band).	19	Case, Antenna CY–1760/GRC	10⅝	20¼	77¾	9.6	165
	20	Case, Antenna CY–1760/GRC	10⅝	20¼	77¾	9.6	165
	21	Case, Accessories CY–1760/GRC	18⅝	13⅛	21	2.9	72
	22	Case, Accessories CY–1344/TRC	18⅝	13⅛	21	2.9	72
Amplifier Group OA–1390/GRC (A-band).	23	Case, Standardized Components, Electrical CY–1338/TRC.	18⅝	17⅞	21¼	4.1	44
	24	Case, Standardized Components, Electrical CY–1338/TRC.	18⅝	18⅛	21¼	4.1	44
	25	Case, Standardized Components, Electrical CY–1338/TRC.	18⅝	17⅞	21¼	4.1	44
Radio Set Group OA–1387/GRC	26	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	27	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	28	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	29	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	30	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	31	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	32	Case, Power Supply CY–1840/TRC	18¾	18⅛	21	4.2	133
	33	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4.2	133
	34	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4.2	133
	35	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	36	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	37	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	38	Transformer, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅞	1.9	66
	39	Transformer, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅞	1.9	66
	40	Transformer, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅞	1.9	66

(11) *Radio Repeater Set AN/GRC-80.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA-1676/GRC.	1	Case, Accessories CY-1343/TRC	18⅜	21⅝	22½	5.2	145
Generator Set Group OA-1675/GRC.	2	Reel, Cable RC-405/TR	15⅛	31¼	31¾	8.5	181
	5	Ground Rod MX-148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA-1398/GRC.	7	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	8	Case, Accessories CY-1392/G	12⅝	18¾	21¼	2.9	140
	9	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	10	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	11	Case, mast	5½	18¾	71	3.7	98
	12	Case, mast	5½	18¾	71	3.7	98
	13	Case, mast	5½	18¾	71	3.7	98
	14	Case, mast	5½	18¾	71	3.7	98
	15	Case, mast	5½	18¾	71	3.7	98
	16	Case, mast	5½	18¾	71	3.7	98
	17	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103
	18	Reel, Cable RC-404/TR (2 ea)	14	25⅞	27⅝	5.3	103
Amplifier Group OA-1392/GRC (B-band).	19	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
	20	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
	21	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
Amplifier Group OA-1396/GRC (D-band).	22	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
	23	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
	24	Case, Standardized Components, Electrical CY-1338/TRC.	18⅜	17⅞	21¼	4.1	44
Antenna Group OA-1389/GRC	25	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4.5	75
	26	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4.5	75
	27	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51⅜	13.1	137
	28	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13.1	137
Antenna Filter Group OA-1397/GRC (D-band).	29	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2.9	72
	30	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2.9	72
	31	Case, Antenna CY-1761/GRC	10⅝	22¾	25⅞	3.6	73
	32	Case, Antenna CY-1761/GRC	10⅝	22¾	25⅞	3.6	73

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Radio Set Group OA–1387/GRC	33	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	34	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	35	Case, Transmitter CY–1341/TRC	18¾	21½	22½	5.2	122
	36	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	37	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	38	Case, Receiver CY–1339/TRC	18½	18	21	4.1	100
	39	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4.2	133
	40	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4.2	133
	41	Case, Power Supply CY–1340/TRC	18¾	18⅛	21	4.2	133
	42	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	43	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	44	Case, Accessories CY–1342/TRC	18⅝	21⅝	22½	5.2	118
	45	Transformers, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅛	1.9	66
	46	Transformers, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅛	1.9	66
	47	Transformers, Power, Fixed Auto Transformer TF–167/TRC.	13⅞	14⅜	18⅛	1.9	66
Antenna Filter Group OA–1393/GRC (B-band).	48	Case, Antenna CY–1371/TRC	10½	18½	29¾	3.3	84
	49	Case, Antenna CY–1371/TRC	10½	18½	29¾	3.3	84
	50	Case, Accessories CY–1344/TRC	18⅝	13⅛	21	2.9	72
	51	Case, Accessories CY–1344/TRC	18⅝	13⅛	21	2.9	72

(12) *Radio Repeater Set AN/GRC–83.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Power Accessories Group OA–1676/GRC.	1	Case, Accessories CY–1343/TRC	18⅝	21⅝	22½	5.2	145
Generator Set Group OA–1675/GRC.	2	Reel, Cable RC–405/TR	15⅛	31¼	31¼	8.5	181
	5	Ground Rod MX–148/G (2 ea)	72	1¾	¾	0.05	15
	6	Drum, gasoline (10 ea)	34¼	21¼	29¾	12.5	140
Antenna Accessories Group OA–1398/GRC.	7	Case, Accessories CY–1392/G	12⅝	18¾	21¼	2.9	140
	8	Case, Accessories CY–1392/G	12⅝	18¾	21¼	2.9	140
	9	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	10	Carrying case, guy stake	5⅞	20½	51½	3.6	140
	11	Case, mast	5½	18¾	71	3.7	98
	12	Case, mast	5½	18¾	71	3.7	98
	13	Case, mast	5½	18¾	71	3.7	98
	14	Case, mast	5½	18¾	71	3.7	98
	15	Case, mast	5½	18¾	71	3.7	98
	16	Case, mast	5½	18¾	71	3.7	98
	17	Reel, Cable RC–404/TR (2 ea)	14	25⅞	27⅝	5.3	103
	18	Reel, Cable RC–404/TR (2 ea)	14	25⅞	27⅝	5.3	103

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
Antenna Group OA-1389/GRC	19	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4.5	75
	20	Case, Antenna Reflector Support CY-1387/TRC.	7½	30¼	34⅜	4.5	75
	21	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13.1	137
	22	Case, Antenna Reflector CY-1385/TRC.	13	34¼	51¾	13.1	137
Radio Set Group OA-1387/GRC	23	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	24	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	25	Case, Transmitter CY-1341/TRC	18¾	21½	22½	5.2	122
	26	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	27	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	28	Case, Receiver CY-1339/TRC	18½	18	21	4.1	100
	29	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	30	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	31	Case, Power Supply CY-1340/TRC	18¾	18⅛	21	4.2	133
	32	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	33	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	34	Case, Accessories CY-1342/TRC	18⅝	21⅝	22½	5.2	118
	35	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	36	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
	37	Transformer, Power, Fixed Auto Transformer TF-167/TRC.	13⅞	14⅜	18⅞	1.9	66
Amplifier Group OA-1394/GRC (C-band).	38	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
	39	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
	40	Case, Standardized Components, Electrical CY-1338/TRC.	18⅝	17⅞	21¼	4.1	44
Antenna Filter Group OA-1395/GRC (C-band).	41	Case, Accessories CY-1344/TRC	18⅝	13⅛	21	2.9	72
	42	Case, Accessories CY-1334/TRC	18⅝	13⅛	21	2.9	72
	43	Case, Antenna CY-1370/TRC	10⅛	22½	25⅛	3.6	73
	44	Case, Antenna CY-1370/TRC	10⅛	22½	25⅛	3.6	73

(13) *Radio Set Group AN/TRA–25.*

Component groups	Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
			Height	Width	Depth		
	1	Case CY–2854/TRA–25 containing: Amplifier-Converter AM–2537/TRA–25, Oscillator-Multiplier OA–735/TRA–25, and Mixer Stage, Frequency CV–932/TRA–25.	19⅜	18⅜	22⅞	4.7	88
	2	Case, Antenna CY–2853/TRA–25	17⅞	32⅛	33⅛	11	117
	3	Case, Antenna CY–2853/TRA–25	17⅞	32⅛	33⅛	11	117
	4	Antenna AS–1083/TRA–25, spare tubes and Oscillator-Multiplier O–734/TRA–25.	13½	13¼	35	3.6	48

(14) *Radio Set Group AN/TRA–25.*

Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
		Height	Width	Depth		
1	Case, Amplifier and Mixer Stage CY–2854/TRA–25 containing	19⅜	18⅜	22⅞	4.7	88
	1 ea Mixer Stage, Frequency CV–932/TRA–25.					
	1 ea Oscillator-Multiplier 0–734A/TRA–25 (or 0–735A/TRA–25).					
	1 ea Amplifier-Converter AM–2537/TRA–25.					
2	Case, Antenna CY–2595/GR containing	36¼	28⅝	28⅝		59
	1 ea Antenna AT–903/G.					
3	Case, Antenna CY–2595/GR containing	26¼	28⅝	28⅝		59
	1 ea Antenna AT–903/G.					
4	Case, Accessories CY–3622/TRA–25A containing	11½ 23	50 45½	26¾ 4 15/16	9.3	135
	1 ea Support, Antenna AB–720/G,					
	1 ea Oscillator-Multiplier 0–735A/TRA–25 (or 0–734A/TRA–25),					
	2 ea Cable Assembly, Radio Frequency CG–1030A/U (80 ft),					
	2 ea Cable Assembly, Radio Frequency CG–1890/U (51 in.),					
	1 ea Cable Assembly, Special Purpose, Electrical CX–6128/U (65 in.).					
	1 set running spares consisting of:					
	1 ea tube, electron 5876,					
	1 ea tube, electron 6939,					
	2 ea tube, electron 12AT7WA,					
	1 ea tube, electron 3CX100A5, special,					
	5 ea cartridge fuse, 3/10 ampere, 3AG,					
	1 ea Crystal CR–52/U (38.34722 mc),					
	1 ea Crystal CR–52/U (41.12500 mc),					
	1 ea crystal 1N21ER.					

(15) *Radio Set Group OA–3668A/TRC–24.*

Case No.	Contents	Dimensions (in.)			Volume (cu ft)	Weight (lb)
		Height	Width	Depth		
	Case, Standardized, Components, Electrical CY–1338/TRC (modified) containing: Amplifier-Converter AM–3204A/TRC–24, and Amplifier-Converter AM–3203A/TRC–24	18⅝	17⅞	21¼	4.1	74
2	Case, Accessories CY–1344/TRC (modified) containing: Oscillator Multipliers O–902A/TRC–24, O–903A/TRC–24, and O–904A/TRC–24 and Filter, Band Pass, F–691/TRC–24	18⅝	13⅛	21	2.9	70
3	Case CY–2595/GR containing: Antenna AT–903/G	38¼	30¼	30¼	20.2	70
4	Case CY–2595/GR containing: Antenna AT–903/G	38¼	30¼	30¼	20.2	70
5	Case CY–3901/TRC–24 containing: 1 ea Support, Antenna AB–720/G, 1 ea Cable Assembly, Special Purpose, Electrical CX–6128/U (5 ft 5 in.), 1 ea Cable Assembly, Special Purpose, Electrical CX–2324A/U, 1 ea Cable Assembly, Radio Frequency CG–2240/U (3 ft), and 1 ea set of running spares	11½	50	26¾	9.3	132
6	Reel, Cable RC–436/GRC containing: 1 ea Cable Assembly, Radio Frequency CG–1859/U (80 ft)¼ 2 ea Adapter, Connector UG–1374/U¼ and 2 ea Cable Assembly, Radio Frequency CG–2636/U (6 ft)	15⅛	31¼	31¼	8.5	183
7	Reel, Cable RC–436/GRC containing: 1 ea Cable Assembly, Radio Frequency CG–1859/U (80 ft)¼ 2 ea Adapter, Connector UG–1374/U¼ and 2 ea Cable Assembly, Radio Frequency CG–2636/U (6 ft)	15⅛	31¼	31¼	8.5	183

b. Removing Contents. Before unpacking the components locate the equipment at the site (para 2–1). The unpacking procedures are given in (1) through (8) below.

***Caution:* Do not attempt to pry off the wooden covers; the equipment will become damaged.**

(1) *Equipment in carrying cases* (fig. 2–2).

(*a*) Cut and fold back the metal straps near the wooden cover.

(*b*) Remove the nails from the wooden cover and remove the cover.

(*c*) Open the moistureproof barrier that covers the outer corrugated carton and remove the outer corrugated carton from the wooden box.

(*d*) Remove the water-resistant pressure-sensitive tape from the top of the outer corrugated carton.

(*e*) Open and fold down the sides of the outer corrugated carton and open the moistureproof-vaporproof barrier.

(*f*) Remove the inner corrugated carton and fold down the sides of the inner corrugated carton.

(*g*) Remove the corrugated fillers, the desiccant, and the carrying case, containing the equipment from the inner corrugated carton.

(2) *Reel Cable RC–404/TR; RC–405/TR, or RC–436/GRC* (fig. 2–3).

(*a*) Cut the metal straps near the wooden cover.

(*b*) Remove the nails from the wooden cover and remove the wooden cover.

(*c*) Remove the RC–404/TR, RC–405/TR, or RC–436/GRC from the wooden box.

(3) *Generator Set, Gasoline Engine PU–236/G* (fig. 2–4).

The bottom of the wooden box is constructed to form a skid base and can be used for sliding the wooden box a short distance.

(*a*) Cut the metal straps near the bottom of the wooden box.

(*b*) Remove the nails at the bottom of the sides and ends of the wooden box.

(*c*) Remove the wooden box by lifting it straight up.

(*d*) Remove the moistureproof-vaporproof barrier.

(*e*) Loosen the draw cord and remove the canvas cover.

(*f*) Remove the paperboard wrapping cushion from the PU-286/G.

(*g*) Remove the carriage bolts and nuts that secure the PU-286/G to the skid base.

(4) *Ground Rod MX-148/G* (fig. 2-5).

(*a*) Cut the tape and remove the burlap covers.

(*b*) Cut the tape and separate the ground rods.

(5) *Gasoline drums* (fig. 2-6).

(*a*) Cut the metal straps on the wooden crate cover.

(*b*) Remove the nails from the wooden crate cover and remove the cover.

(*c*) Remove the moistureproof barrier containing the gasoline spouts from the wooden crate.

(*d*) Remove the gasoline drums from the wooden crate.

(6) *Mast case or guy stake carrying case* (fig. 2-7).

(*a*) Cut the metal straps near the wooden cover.

(*b*) Remove the nails from the wooden cover and remove the cover.

(*c*) Remove the fiberboard box from the wooden box.

(*d*) Cut the water-resistant pressure-sensitive tape on the top of the fiberboard box.

(*e*) Fold down the sides of the fiberboard box, raise the top of the inner fiberboard sleeve, and remove the mast case or guy stake carrying case.

(7) *Antenna AS-1083/TRA-25, spare tubes and Oscillator-Multiplier O-734/TRA-25 (F-band) (AN/TRA-25 only)* (fig. 2-8).

(*a*) Cut and fold back the metal straps near the wooden cover.

(*b*) Remove the nails from the wooden cover and remove the cover.

(*c*) Remove the fiberboard boxes and the package with paperboard cushioning wrapping from the wooden box.

(*d*) Open and fold back the sides of the fiberboard box containing the AS-1030/TRA-25.

(*e*) Remove the fiberboard blocking from the AS-1030/TRA-25.

(*f*) Remove the AS-1030/TRA-25 from the fiberboard box.

(*g*) Remove the paperboard cushioning wrapping and waterproof barrier from the fiberboard box containing the O-734/TRA-25.

(*h*) Open and fold down the sides of the fiberboard box containing the O-734/TRA-25.

(*i*) Remove the top pad and sleeve from the O-734/TRA-25.

(*j*) Remove the O-734/TRA-25 from the fiberboard box.

(*k*) Open and fold back the sides of the fiberboard box containing the spare tubes and remove the contents.

(8) *Antenna AT-903/G (F-band, AN/TRA-25A) (J-band, 60A-3668A/TRC-24)* (fig. 2-9).

(*a*) Release the latches on the top of the CY-2595/GR.

(*b*) Remove case, Antenna CY-2595/CR cover.

(*c*) Lift the AT-903/G out of the CY/2595/GR.

(*d*) Replace the cover on the top of the CY-2595/GR, and secure it with the latches.

2-3. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3).

b. See that the equipment is complete as listed on the packing slip. Report all discrepancies in accordance with AR735-11-2. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modification have been entered in the equipment manual.

NOTE

Current MWO's applicable to the equipment are listed in DA Pam 310-7.

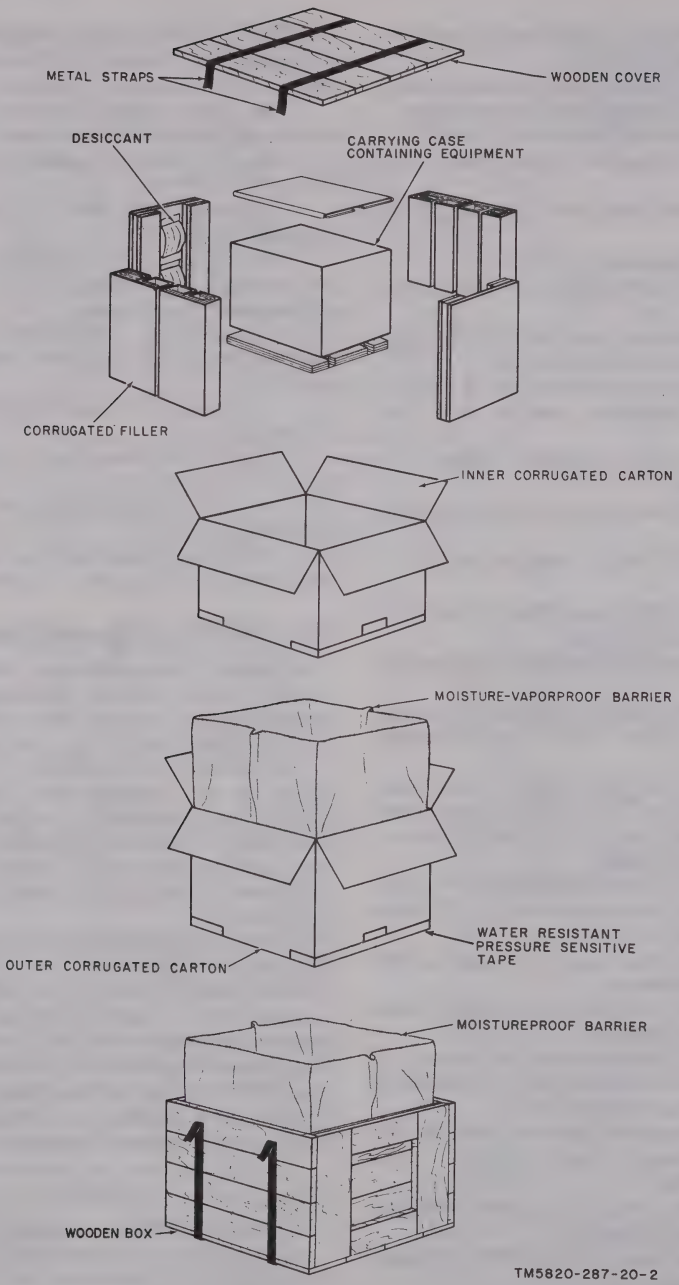


Figure 2-2. Typical packing and packaging diagram for equipment in carrying case.

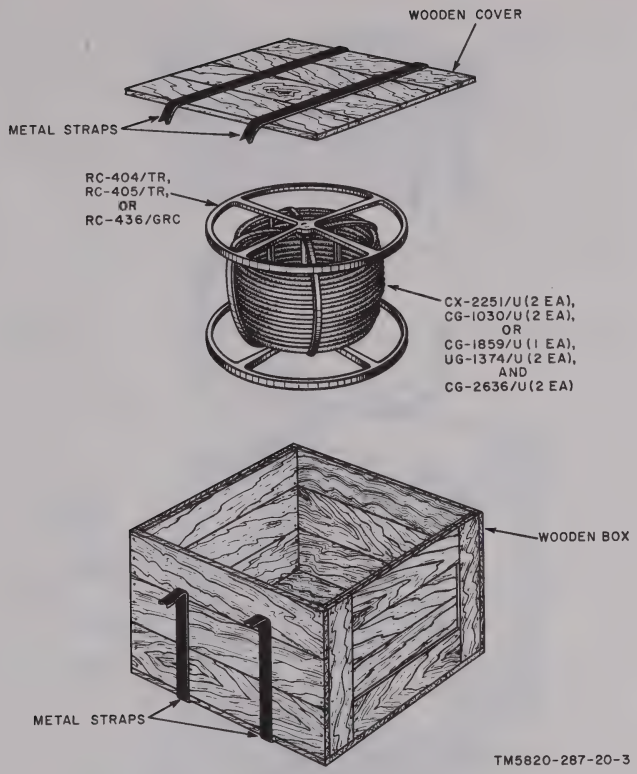


Figure 2–3. Packaging and packing diagram for reel, cable RC–404/TR, RC–405/TR, or RC–436/GRC.

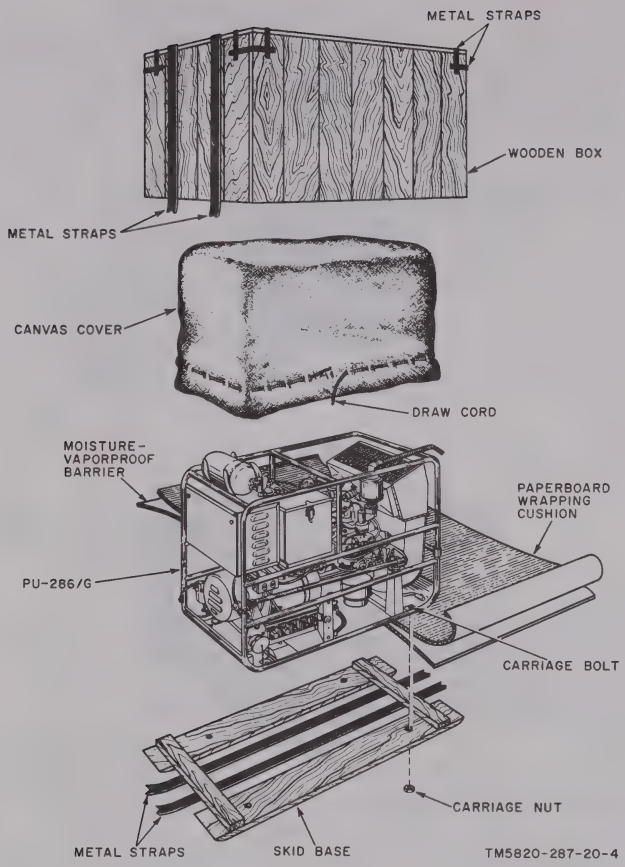


Figure 2–4. Packaging and packing diagram for Generator Set, Gasoline Engine PU–286/G.

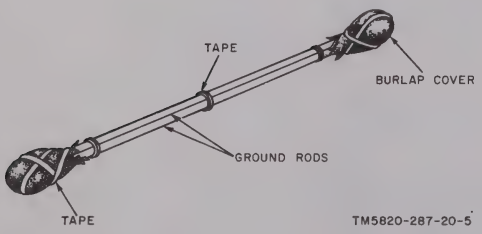


Figure 2–5. Packaging and packing diagram for Ground Rod MX–148/G.

d. Refer to TM 11–6115–204–10, –20, and –35 to check the PU–286/G.

2–4. Installation of Equipment

a. Antenna Assembly.

(1) *General.*

(*a*) The same antenna support is used with the A-, B-, C-, D-, F-, and J-band antennas. The procedures for assembling the antenna support are covered in (2) through (5) below.

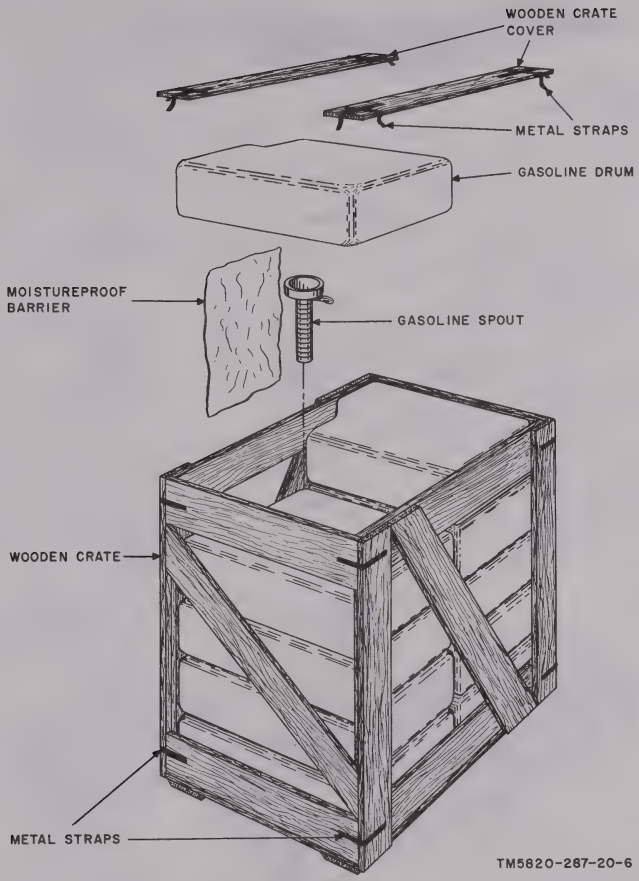


Figure 2–6. Packaging and packing diagram for gasoline drums.

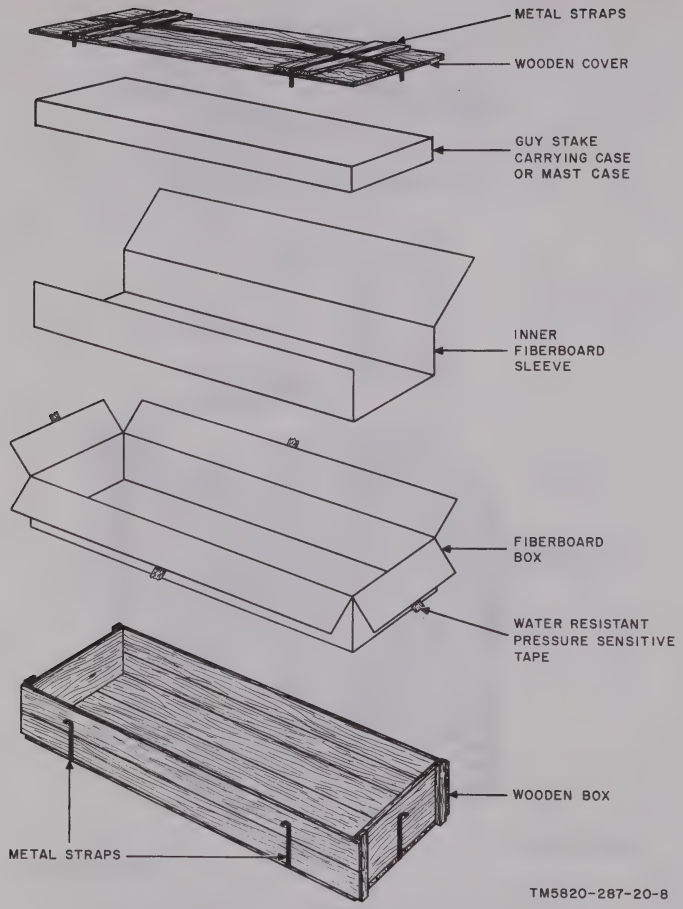


Figure 2–7. Packaging and packing diagram for mast case or guy stake carrying case.

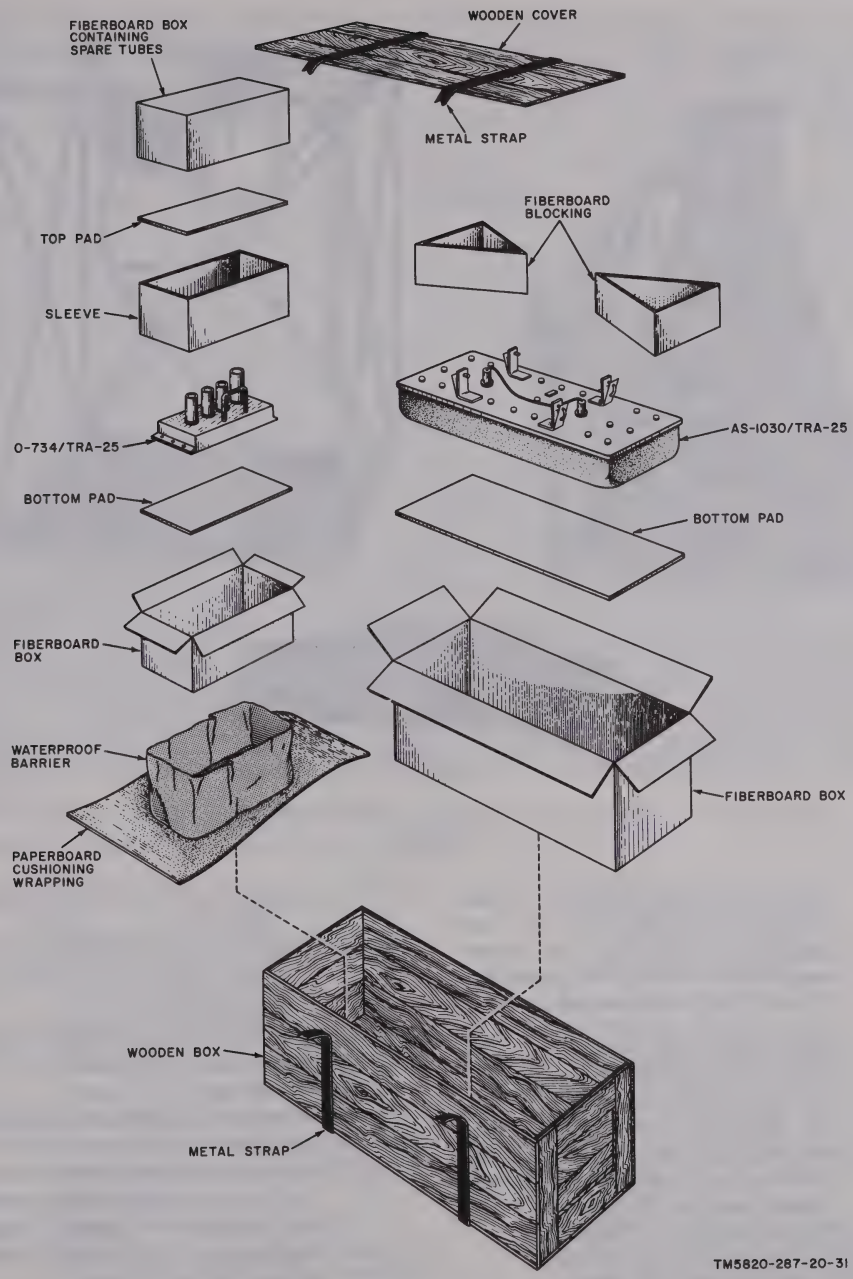


Figure 2-8. Packaging and packing diagram for Antenna Assembly AS-1083/TRA-25, spare tubes, and Oscillator-Multiplier O-734/TRA-25 (F-band, AN/TRA-25 only).

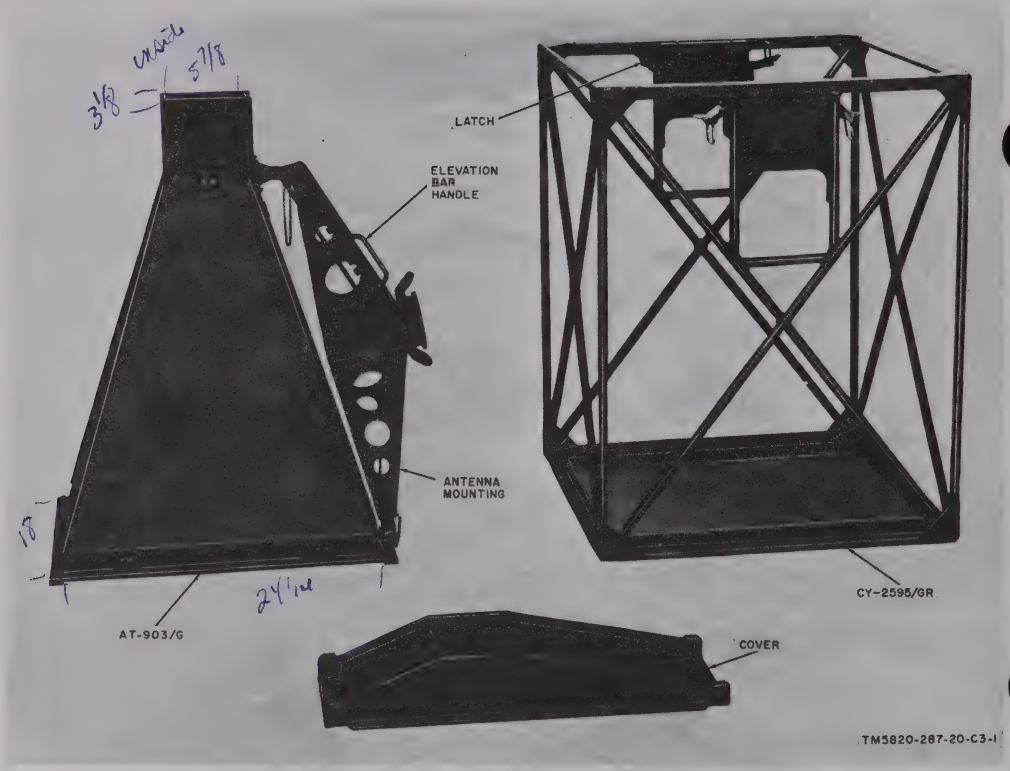


Figure 2–9. Antenna AT–903/G removed from Case, Antenna CY–2595/GR (F-band, AN/TRA–25A; or J-band, OA–3668A/TRC–24).

Support, Antenna AB–720/G is used with the F-band (AN/TRA–25A) and J-band (OA–3668A/TRC–24) antennas. The procedures for assembling the AB–720/G are covered in (4)(*d*) below. If the antenna must be installed higher than 50 feet above the ground, use the AB–216/U (TM 11–5073) as the antenna support.

(*b*) The procedures for assembling and installing the desired antenna on the antenna support are covered as follows:

1. A-band antenna ((6) below).
2. B-band antenna ((7) below).
3. C-band antenna ((8) below).
4. D-band antenna ((9) below).
5. F-band (AN/TRA–25 only) antenna ((10) below).
6. F-band antenna (AN/TRA–25A) and J-band antenna (OA–3668A/TRC–24) ((11) below).

(*c*) The procedures for erecting and securing the antenna assembly are covered in (12) below.

(*d*) The type of equipment, the operating frequency (A-, B-, C-, D-, F-, or J-band), the antenna polarization, and the antenna configuration determine the number of antenna assemblies required at a site. Refer to the chart below.

Type of equipment	Operating frequency (band)	Antenna polarization	Antenna configuration	Number of antenna assemblies required
Radio set or radio terminal set.	A	Horizontal or vertical	Single-stacked	1
			Double-stacked [1]	2
Radio relay set or radio repeater set.	A	Horizontal or vertical	Single-stacked	2
			Double-stacked [1]	4
Radio set or radio terminal set.	B, C, D	Horizontal or vertical	Single reflector	2
			Double reflector	1
Radio relay set or radio repeater set.	B, C, D	Horizontal or vertical	Single reflector	4
			Double reflector	2
Radio set or radio terminal set.	F (AN/TRA–25 only)	Horizontal	Double reflector	1
Radio relay or radio repeater set.	F (AN/TRA–25 only)	Horizontal	Double reflector	2
Radio set or radio terminal set.	F (AN/TRA–25A)	Horizontal or vertical	Double-mounted	1
Radio relay or radio repeater set.	F (AN/TRA–25A)	Horizontal or vertical	Double-mounted	2
Radio set or radio terminal set.	J (OA–3668A/TRC–24).	Horizontal or vertical	Double-mounted	1
Radio relay set or radio repeater set.	J (OA–3668A/TRC–24).	Horizontal or vertical	Double-mounted	2

[1] A-band antenna is double-stacked for reception of extremely weak signals only.

(2) *Preparation for assembly of antenna support.*

(*a*) *Establishing ground layout plan.* Refer to figure 2–10 and determine the locations for the mast base, the gin pole stake, and the guy stakes.

(*b*) *Positioning and securing mast base.*

1. Remove the mast base (fig. 2–11) from Case, Accessories CY–1392/G.

2. Loosen the swivel locks.

3. Rotate the swivel until the index mark is aligned with the zero mark on the base plate.

4. Finger-tighten the swivel locks.

5. Position the mast base in the center of the ground layout plan (fig. 2–10) so that the zero mark on the base plate faces the direction in which the mast will lie during assembly.

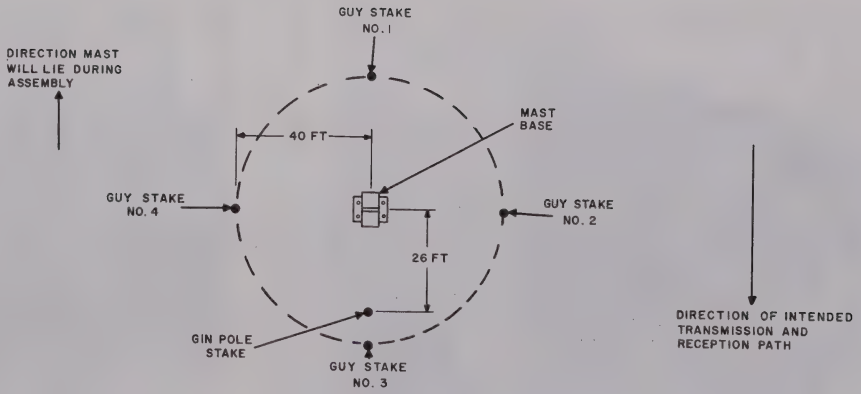
Note. The direction in which the mast will lie during assembly should be in line with the intended transmission and reception path on the opposite side of the mast base.

6. Position the GIN POLE tube and the MAST tube as shown in figure 2–11.

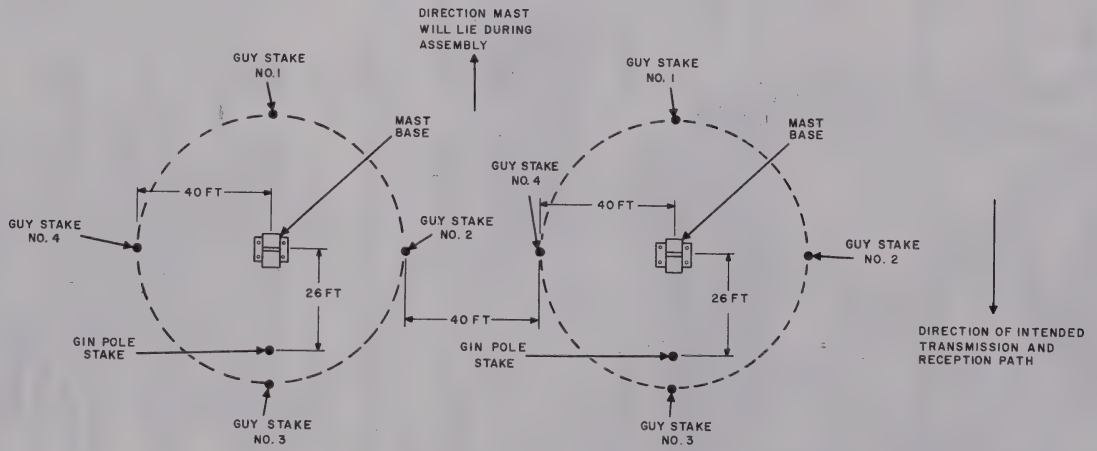
7. Remove Stakes GP–2 from the guy stake carrying case.

8. Anchor the mast base in position with Stakes GP–2 as shown in A, figure 2–12.

9. Raise the GIN POLE tube to the vertical position and lower it over the 90 mark on the base plate as shown in B, figure 2–12.



A. GROUND LAYOUT PLAN FOR ONE ANTENNA ASSEMBLY.



B. GROUND LAYOUT PLAN FOR TWO ANTENNA ASSEMBLIES.

TM5820-287-20-9

Figure 2-10. Antenna assembly, ground layout plans.

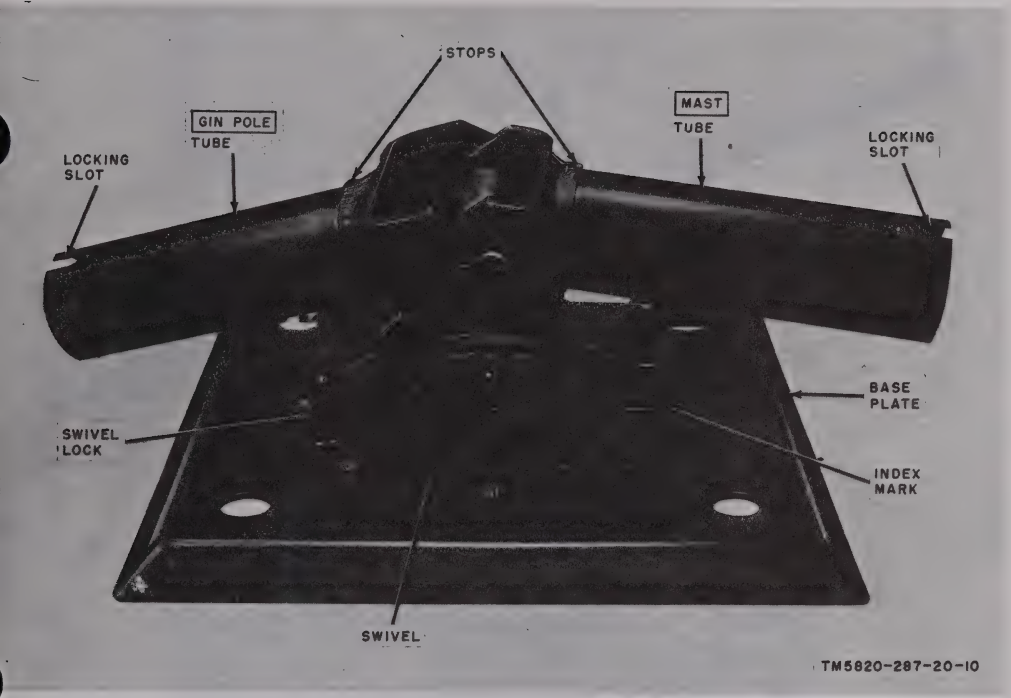


Figure 2–11. Mast base of antenna support.

(*c*) *Anchoring guy and gin pole stakes.*

1. Remove Stakes, Guy GP–113/G (A, fig. 2–13) from the guy stake carrying case.

2. Refer to figure 2–10 to determine the locations of guy stakes No. 1 through 4 and gin pole stake.

3. Anchor guy stakes No. 1 through 4 and the gin pole stake as shown in B, figure 2–13.

(3) *Gin pole assembly.*

(*a*) Remove five Mast Sections AB–332/G from the mast case.

(*b*) Install a mast section on the GIN POLE tube as shown in figure 2–14. Be sure the locking pin on the mast section is in the locking slot of the GIN POLE tube so that the end of the mast section butts against the stop of the GIN POLE tube.

(*c*) Install the four remaining mast sections sequentially on the mast section on the GIN POLE tube. Be sure the locking pin on each mast section is in the locking slot of the mast section on which it mounts so that the end of the mast section butts against the stop on the mast section.

(*d*) Install the gin pole cap (fig. 2–22) on the last mast section of the gin pole with the guy attachment holes facing the direction that the mast will lie.

(4) *Mast assembly.* Follow the procedures given in (*a*) below when assembling the mast for the A-band antenna support. Follow the procedures given in (*b*) below when assembling the mast for the B-, C-, or D-band antenna support. Follow the procedures given in (*c*) below when assembling the mast for the F-band

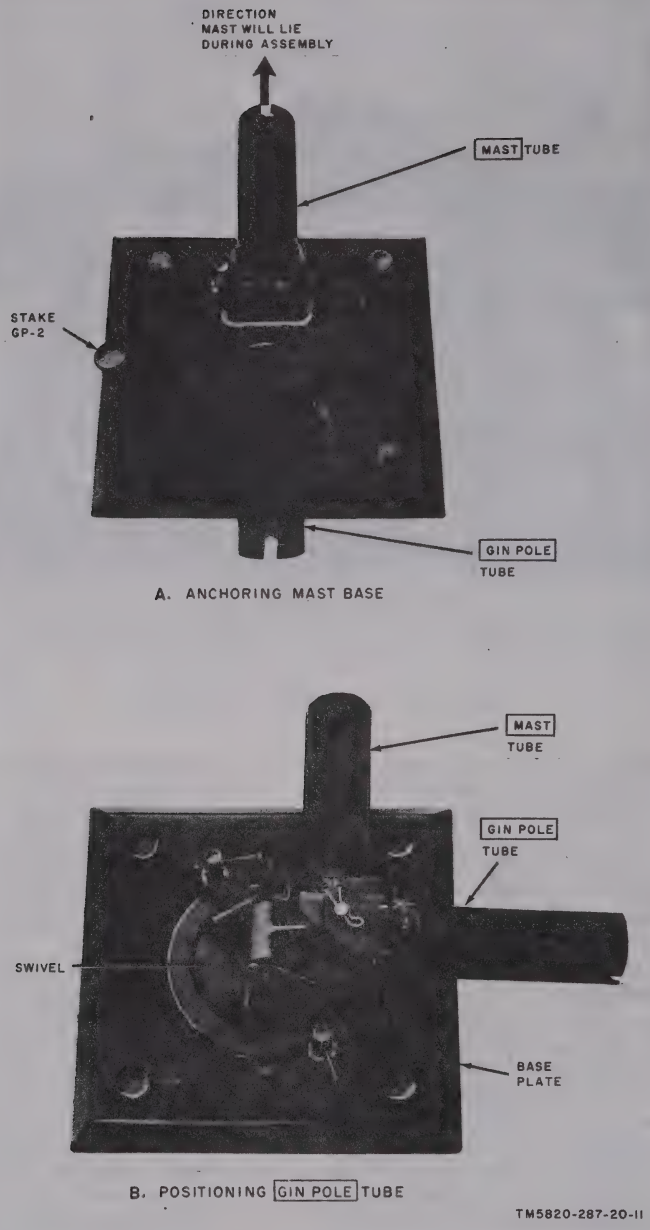
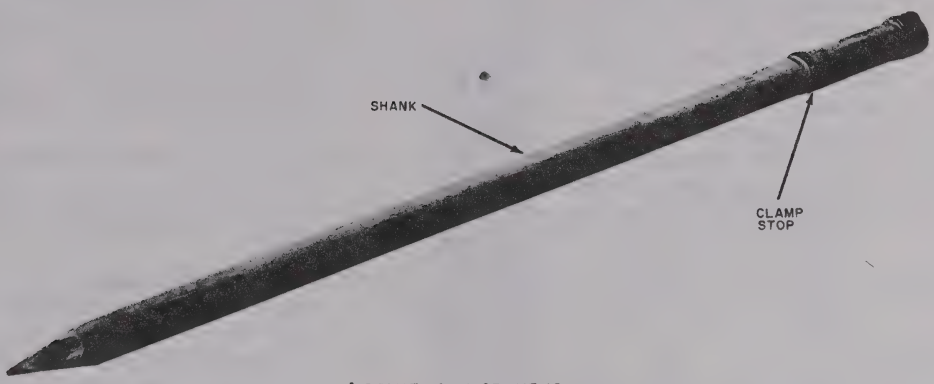
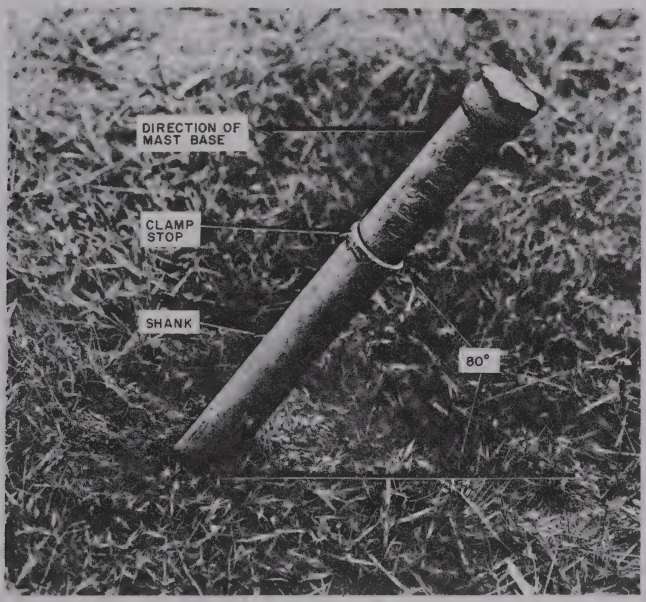


Figure 2–12. Anchoring of mast base and positioning GIN POLE tube.



A. STAKE, GUY GP-113/G



B. ANCHORING OF STAKE, GUY GP-113/G

TM5820-287-20-12

Figure 2–13. Stake, Guy GP–113/G and method of anchoring.

(AN/TRA–25) antenna support. Follow the procedures given in (*d*) below when assembling the mast for the J-band (OA–3668A/TRC–24) or F-band (AN/TRA–25A) antenna support.

(*a*) *A-band.*

1. Remove nine Mast Sections AB–332/G from the mast case.

2. Install a mast section on the MAST tube (fig. 2–14). Be sure the locking pin on the mast section is in the locking slot of the MAST tube so that the end of the mast section butts against the stop on the MAST tube.

3. Add two more mast sections to the mast section on the MAST tube. Be sure the locking pin of each mast section is in the locking slot of the mast section on which it mounts so that the end of the mast section butts against the stop on the mast section on which it mounts.

4. Install a guy plate on the third mast section as shown in figure 2–15.

5. Install three more mast sections on the mast sections on the MAST tube. Be sure the locking pin of each mast section is in the locking slot of the mast section as shown in figure 2–15.

6. Install a guy plate on the sixth mast section as shown in figure 2–15.

7. Install two more mast sections on the mast sections on the MAST tube. Be sure the locking pin of each mast section is in the locking slot of the mast section on which it mounts.

8. Install a guy plate on the eighth mast section as shown in figure 2–15.

9. Install the remaining mast section on the eighth mast section. Be sure the locking pin of the last mast section is in the locking slot of the eighth mast section.

(*b*) *B-, C- or D-band.*

1. Perform the procedures given in (*a*)*1* through *6* above.

2. Install the three remaining mast sections on the mast sections on the MAST tube.

3. Determine whether the antenna will use one or two AT–414/TRC's.

4. Secure the top guy plate to the appropriate mounting stub with the retaining bolts (fig. 2–16).

5. Install the AB–325/TRC on the ninth mast section.

6. Determine the required antenna polarization.

7. Install the AT–414/TRC on the AB–325/TRC as illustrated in figure 2–18 or 2–19.

(*c*) *F-band (AN/TRA–25 only).*

1. Perform the procedures given in (b)*1* and *2* above.

2. Install the AB–325/TRC on the ninth mast section of the mast as shown in B, figure 2–16.

(*d*) *F-band (AN/TRA–25A) or J-band (OA–3668A/TRC–24).*

1. Perform the procedures given in (b)*1* and *2* above.

2. Install the AB–720/G on the ninth mast section as shown in figure 2–17.

3. Attach Guys MX–1483/G and MX–1484/G as shown in figure 2–17.

(5) *Raising and securing gin pole.*

(*a*) Refer to figures 2–15, 2–20, 2–21 and 2–22 and attach the guys, the guy ropes, and the block and tackle assembly. Be careful to avoid crossing the guys. Make the length of the guys attached to stake No. 1 (fig. 2–20 equal to the length of the equivalent guys attached to stakes No. 2 and 4. Make the length of guy rope No. 1 equal to the length of the mast.

Caution: **Be sure the MX–1884/G attached to the gin pole is taut and the MX–1483/G's attached to the gin pole, are slightly loose. This condition will cause the mast to bow slightly when it is being raised and prevent it from toppling over.**

(*b*) Raise the gin pole to a vertical position.

(*c*) Attach guy rope No. 2 to guy stake No. 4 as shown in figure 2–23.

(*d*) Pull the free end of the block and tackle assembly and raise the mast until it is approximately 3 feet above the ground.

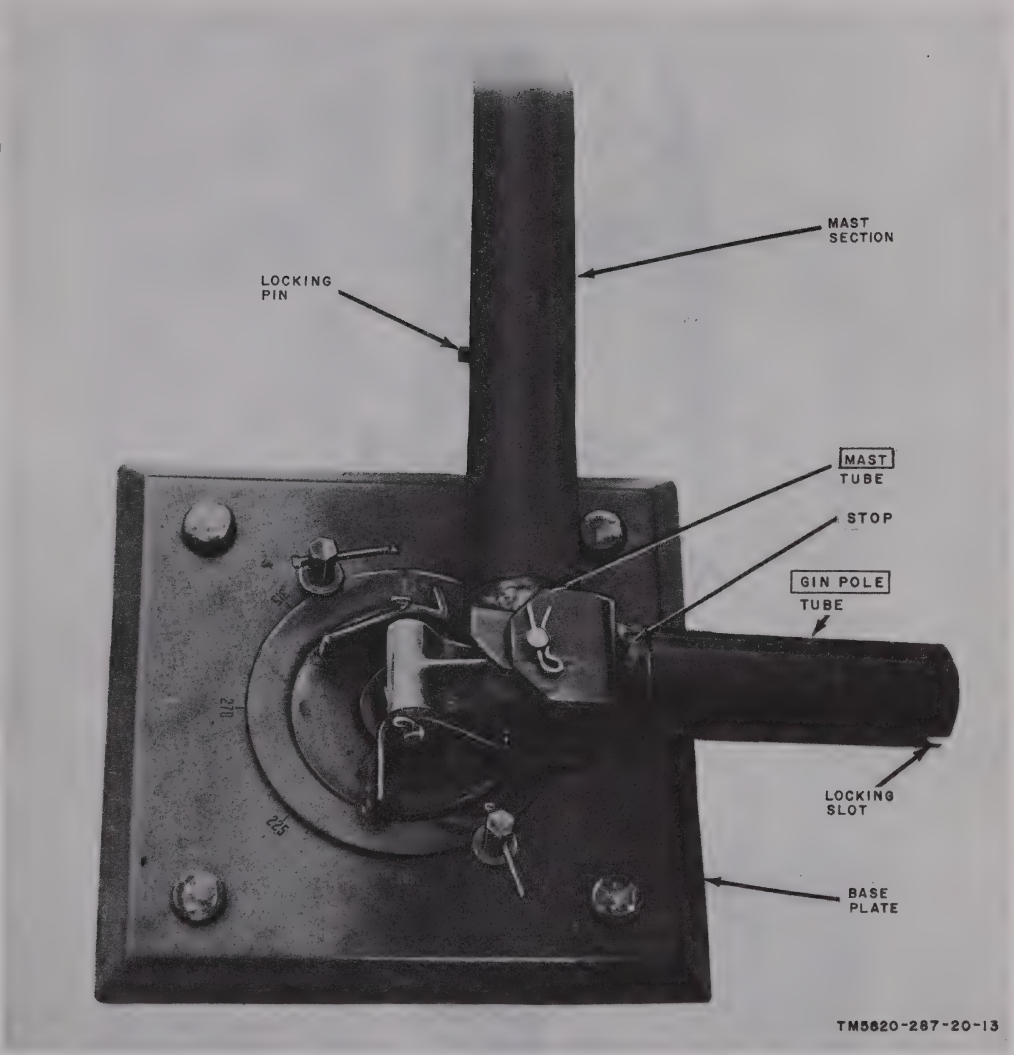


Figure 2–14. Mast section installed on MAST tube of mast base.

(*e*) Install the antenna mast cradle of Antenna Group OA–1389/GRC under the ninth mast section as shown in figure 2–23 and allow the mast to rest on the antenna mast cradle.

Note. When the A-band antenna is to be installed on the mast ((6) below), use the antenna mast stand of Antenna Filter Group OA–1391/GRC instead of the antenna mast cradle of Antenna Group OA–1389/GRC.

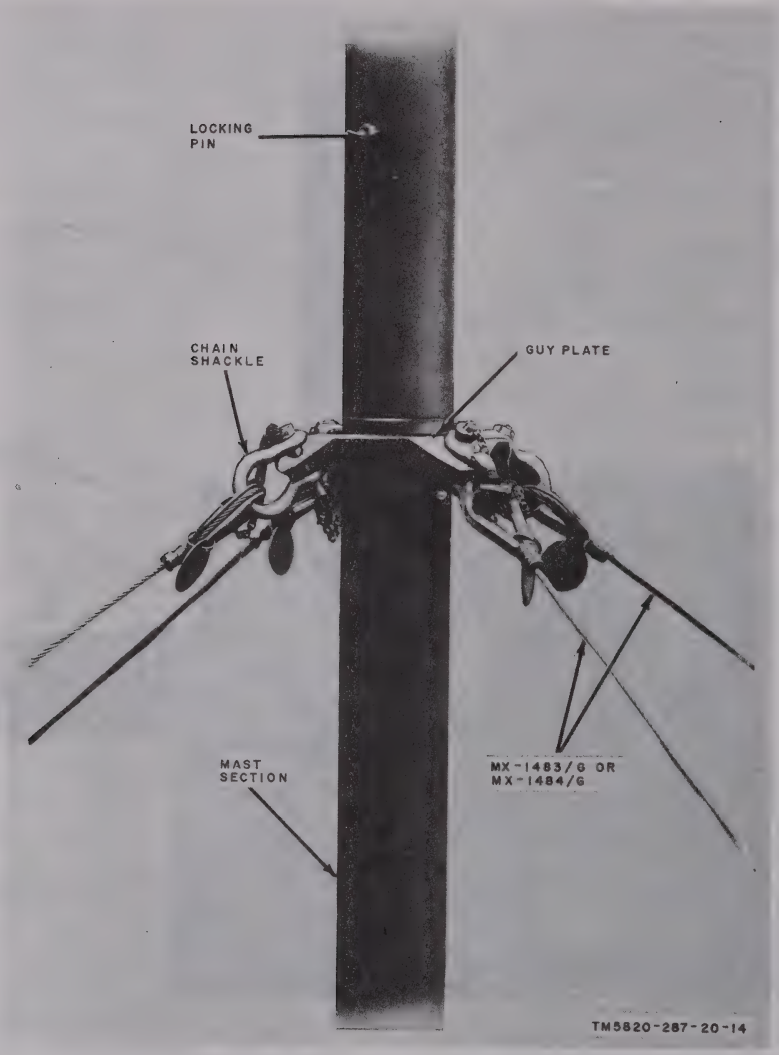


Figure 2-15. Guy plate installed on mast section with MX-1483/G's or MX/1484/G's attached to guy plate.

(6) *Assembly and installation of A-band antenna.*

(*a*) Determine the type of polarization and the radiofrequency (RF) channel number or frequency required.

(*b*) Refer to figure 2-24 and assemble the A-band antenna.

(*c*) Install the mast head casting with the attached A-band antenna on the ninth mast section of the mast. Be sure the directors are facing toward the sky.

(*d*) Determine whether the A-band antenna is to be single-stacked or double stacked.

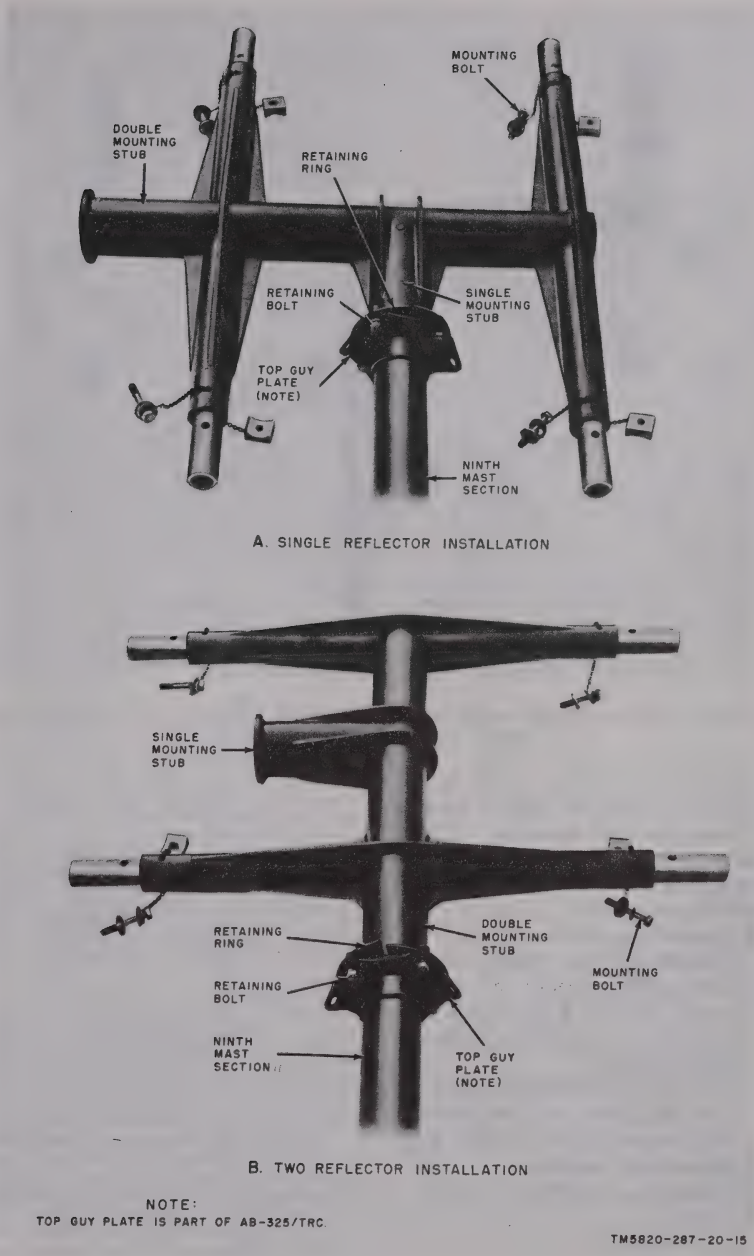


Figure 2-16. Antenna Reflector Support AB-325/TRC installed on ninth mast section for use with one or two AT-414/TRC's.

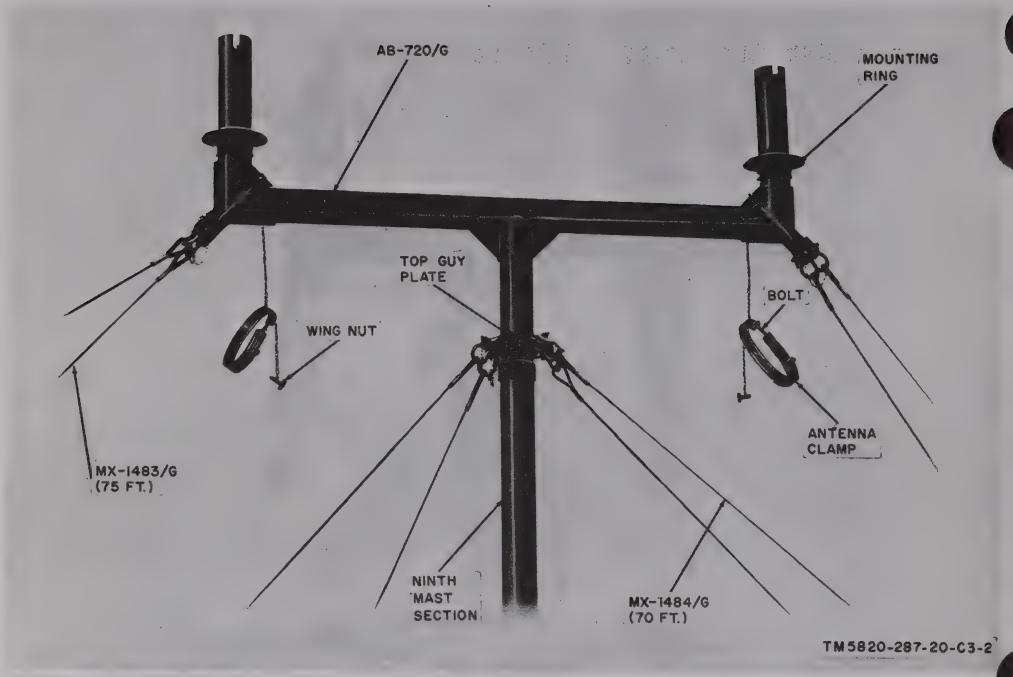


Figure 2–17. Support, Antenna AB–720/G installed on ninth mast section for use with two AT–903/G's (F-band, AN/TRA–25A or J-band, OA–3668A/TRC–24).

(*e*) Follow the procedures given in (1) below to connect the A-band antenna for single-stacked operation. Follow the procedures given in (2) below to connect the A-band antenna for double-stacked operation.

1. *Single-stacked operation.*
   (a) Connect a CG–1030/U to the transmitting section of the antenna (A, fig. 2–25) and a CG–1030/U to the receiving section of the antenna.
   (b) Secure the CG–1030/U's to the upper guy plate with the electrical clamps as shown in A, figure 2–25.
2. *Double-stacked operation.*
   (a) Obtain the items listed in the chart below.

Quantity	Connector and cable	Federal stock No.
2	UG–710A/U	5935–201–7870
4	UG–573A/U	5935–201–7906
2	UG–572/U	5935–295–5357
1	UG–566A/U	5935–636–8411
7 feet	RG–11A/U	5935–201–7870
5 feet	RG–133/U	None available

   (b) Refer to C, figure 2–25 and make a T-harness for the A-band antenna.
   (c) Connect the T-harness as shown in B, figure 2–25.
   (d) Connect a UG–643/U to the T-harness.
   (e) Connect a CG–1030/U to the UG–643/U.

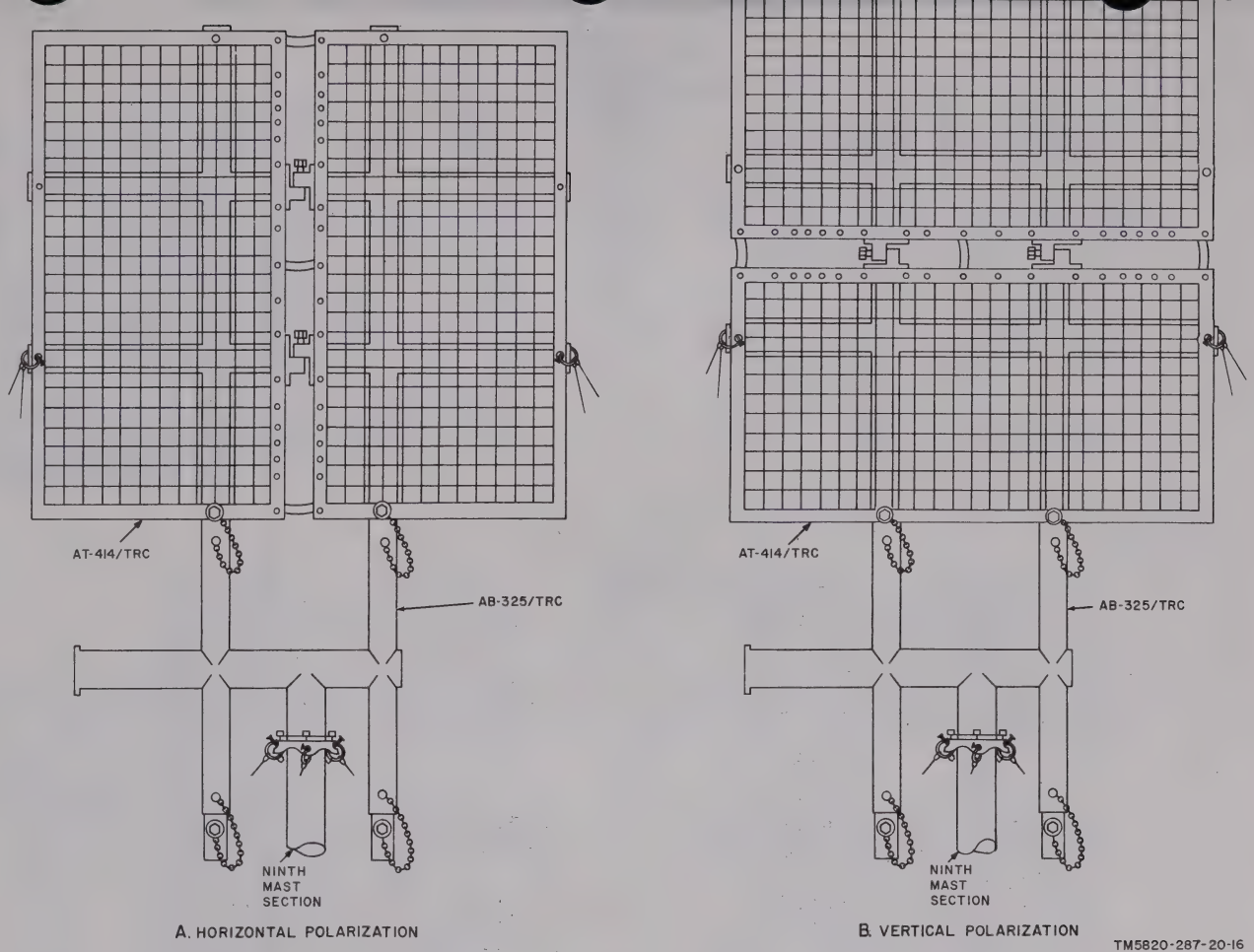


Figure 2–18. Antenna Reflector AT–414/TRC installed on AB–325/TRC for horizontal or vertical polarization.

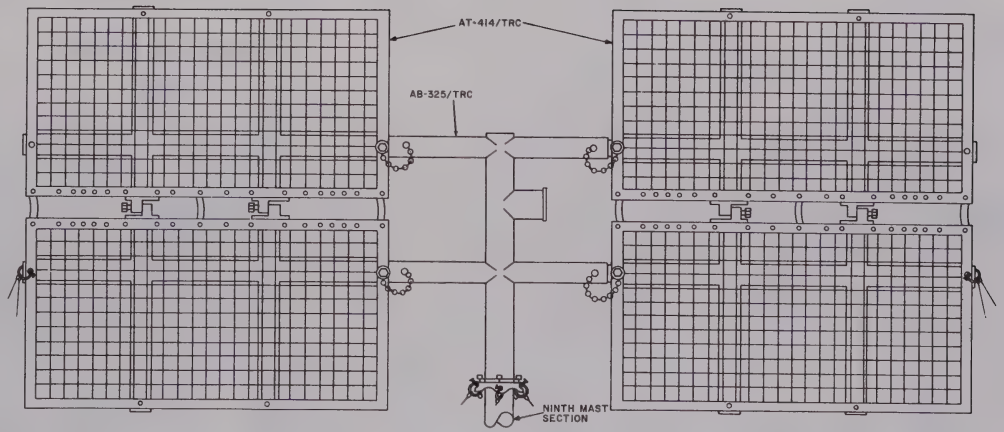


Figure 2-19. Two Antenna Reflectors AT-414/TRC installed on AB-325/TRC for horizontal or vertical polarization.

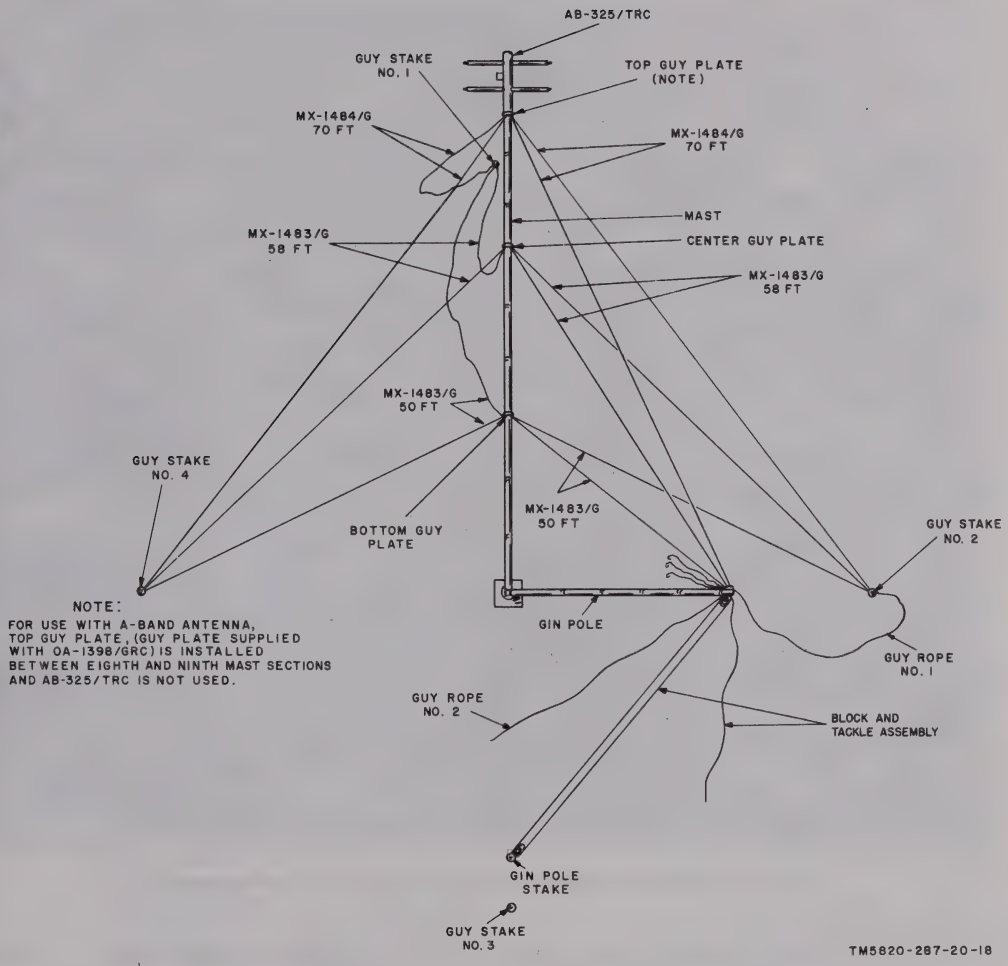

AB-325/TRC
GUY STAKE NO. 1
TOP GUY PLATE (NOTE)
MX-1484/G 70 FT
MX-1484/G 70 FT
MAST
MX-1483/G 58 FT
CENTER GUY PLATE
MX-1483/G 58 FT
MX-1483/G 50 FT
GUY STAKE NO. 4
BOTTOM GUY PLATE
MX-1483/G 50 FT
GUY STAKE NO. 2
NOTE:
FOR USE WITH A-BAND ANTENNA, TOP GUY PLATE, (GUY PLATE SUPPLIED WITH OA-1398/GRC) IS INSTALLED BETWEEN EIGHTH AND NINTH MAST SECTIONS AND AB-325/TRC IS NOT USED.
GIN POLE
GUY ROPE NO. 1
GUY ROPE NO. 2
BLOCK AND TACKLE ASSEMBLY
GIN POLE STAKE
GUY STAKE NO. 3
TM5820-287-20-18

Figure 2–20. Mast and gin pole lying on ground with guys, guy ropes, and block and tackle assembly attached.

(f) Secure the CG–1030/U to the upper guy plate with the electrical clamp as shown in B, figure 2–25.

(*f*) Cable whipping, caused by erratic winds, will damage the CG–1030/U cable connections and cause unreliable operation. To prevent damage and unreliable operation, secure the CG–1030/U with additional electrical clamps and tape the CG–1030/U with Insulating Tape, Electrical TL–192 to the antenna assembly as follows:

1. *Single-stacked operation* (A, fig. 2–25).
   (a) Secure each CG–1030/U to the top guy plate with an additional electrical clamp.
   (b) Securely tape each CG–1030/U with Insulating Tape, Electrical TL–192 to the center of the ninth mast section.

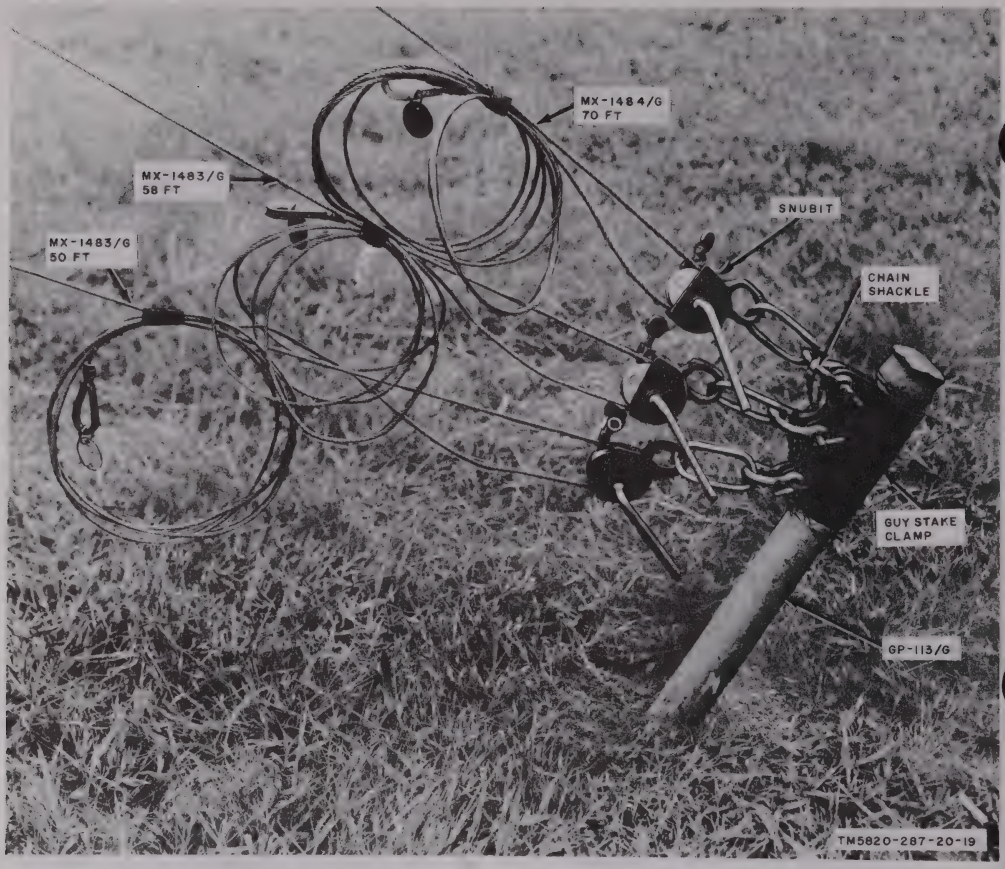


Figure 2–21. Guy stake anchored in ground with guy stake clamp and gugs attached.

2. Double-stacked operation (B, fig. 2–25).

(a) Secure the CG–1030/U to the top guy plate with an additional electrical clamp.

(b) Securely tape the T-harness connector and the UG–643/U with Insulating Tape, Electrical TL–192.

(c) Securely tape the CG–1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL–192.

(7) *Assembly and installation of B-band antenna.*

(*a*) Determine the RF channel number or frequency required.

(*b*) Refer to figure 2–26 and assemble the B-band element assemblies on the AT–414/TRC. Be sure that the element assemblies are facing toward the sky.

(*c*) Refer to figure 2–27 to connect the CG–1042/U and CG–1030/U to the transmitting and receiving sections of a

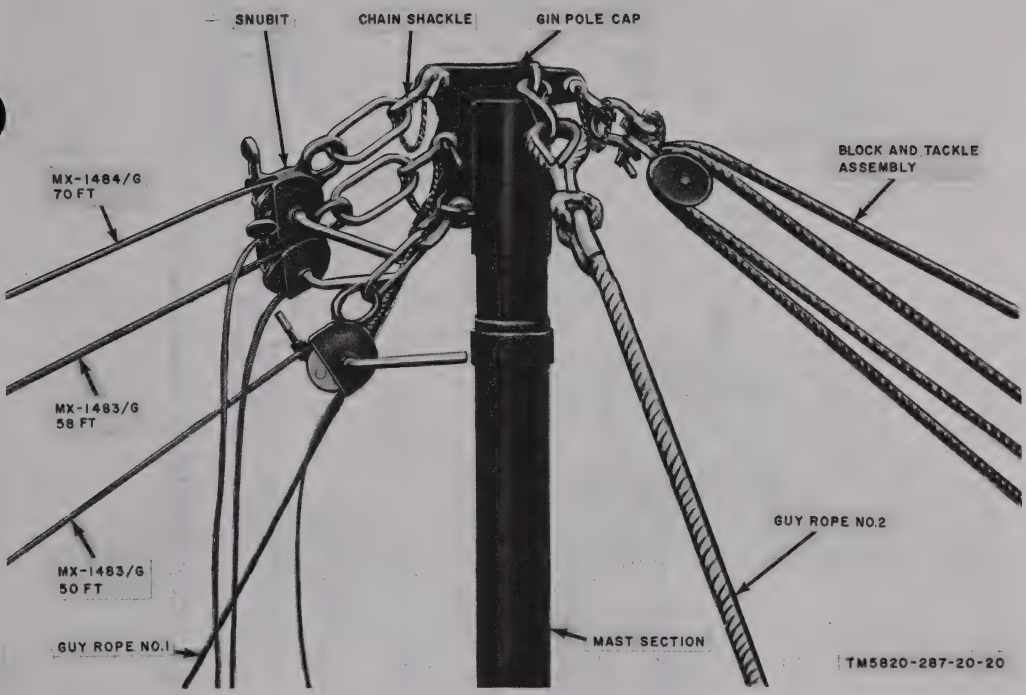


Figure 2-22. Gin pole cap mounted on mast section of gin pole with guys, guy ropes, and block and tackle assembly attached

B-band antenna when using two reflectors.

Note. When one reflector is used, one antenna assembly is required for the receiving antenna and one antenna assembly for the transmitting antenna. Connect the CG-1042/U and CG-1030/U as shown in the receiving section or transmitting section for a B-band antenna when using one reflector.

(*d*) Connect the MX-1483/G's with the chain shackles to the AT-414/TRC as shown in figure 2-27.

(*e*) Cable whipping, caused by erratic winds, will damage the CG-1030/U cable connections and cause unreliable operation. To prevent damage and unreliable operation, secure the CG-1030/U with additional electrical clamps and tape the CG-1030/U with Insulating Tape, Electrical TL-192 to the antenna assembly as follows:

1. *Single-reflector operation* (fig. 2-27).
   (a) Securely tape the T-harness and the CG-1042/U to the AT-414/TRC with Insulating Tape, Electrical TL-192.
   (b) Secure the CG-1030/U with one additional electrical clamp to the AT-414/TRC.
   (c) Securely tape the CG-1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL-192.
2. *Double-reflector operation* (fig. 2-5).
   (a) Securely tape each T-harness and CG-1042/U to the AT-414/TRC with Insulating Tape, Electrical TL-192.
   (b) Secure each CG-1030/U with one additional electrical clamp to the AT-414/TRC.

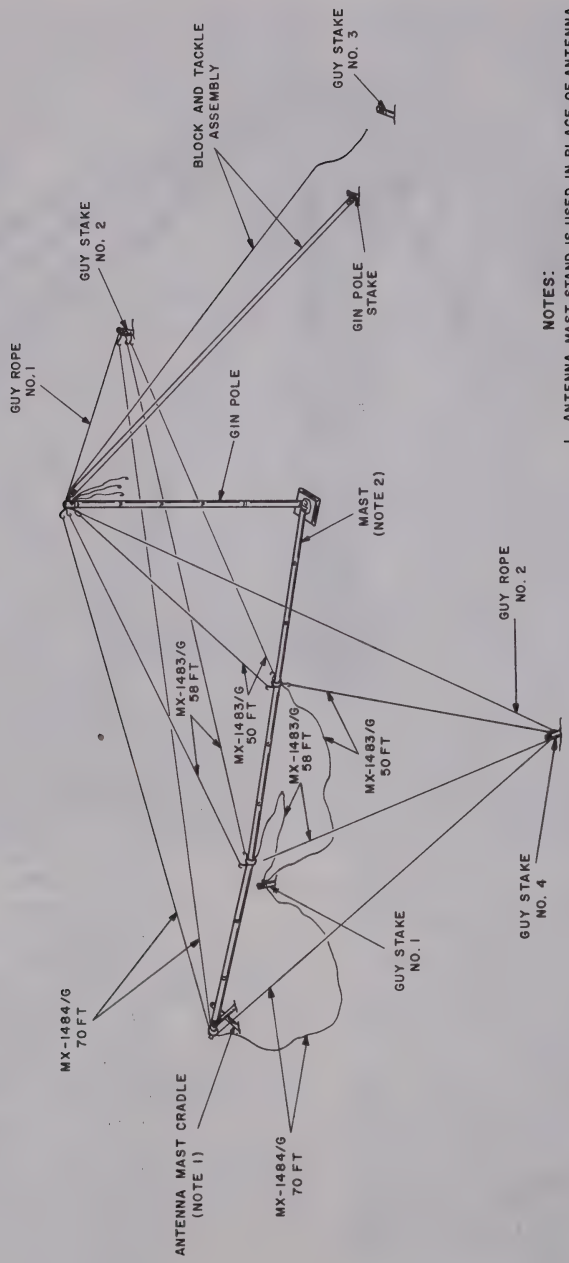
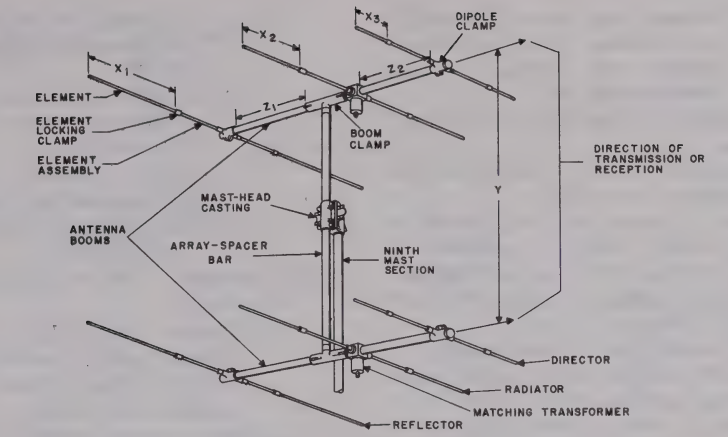
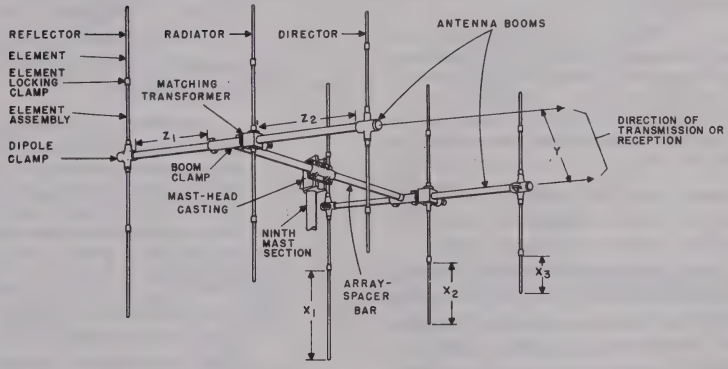


Figure 2-23. Gin pole raised and secured in vertical position with mast lying on antenna mast cradle.



A. HORIZONTAL POLARIZATION



B. VERTICAL POLARIZATION

RF CHANNEL NUMBER	RF CHANNEL FREQUENCY (MC)	ELEMENT SETTING			DIPOLE CLAMP AND ARRAY-SPACER BAR SETTING
		X_1	X_2	X_3	Y, Z_1 AND Z_2
1 THROUGH 16	50 TO 54	60-3/4	56-1/4	49-1/4	A1 - A16
17 THROUGH 32	54 TO 58	56-1/2	52-1/4	45-3/4	A17 - A32
33 THROUGH 48	58 TO 62	52	48-1/4	42-1/4	A33 - A48
49 THROUGH 72	62 TO 67	48-3/4	45	39-1/2	A49 - A72
73 THROUGH 88	67 TO 72	44-1/2	41-1/4	36	A73 - A88
89 THROUGH 108	72 TO 77	41-1/4	38-1/4	33-1/2	A89 - A108
109 THROUGH 128	77 TO 82	39	36	31-1/2	A109 - A128
129 THROUGH 152	82 TO 88	36-1/2	33-3/4	29-1/2	A129 - A152
153 THROUGH 176	88 TO 94	34-1/4	31-3/4	27-3/4	A153 - A176
177 THROUGH 200	94 TO 100	32-1/4	29-3/4	26	A177 - A200

C. ELEMENT, DIPOLE CLAMP, AND ARRAY-SPACER BAR SETTING CHART.

NOTES:

1. ELEMENT SETTINGS (X_1 THROUGH X_3) ARE MARKED ON ELEMENTS.
2. DIPOLE CLAMP SETTINGS (Z_1 AND Z_2) ARE MARKED ON ANTENNA BOOM.
3. ARRAY-SPACER BAR SETTINGS (Y) ARE MARKED ON ARRAY-SPACER BAR.

TM5820-287-20-22

Figure 2-24. A-band antenna assembled and installed on ninth section of mast for vertical and horizontal polarization with chart for antenna settings for various frequencies.

(c) Securely tape each CG-1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL-192.

(8) *Assembly and installation of C-band antenna.*

(*a*) Determine the RF channel number or frequency required.

(*b*) Refer to figure 2-28 and assemble the C-band element assemblies on the AT-414/TRC. Be sure the element assemblies are facing toward the sky.

(*c*) Refer to figure 2-27 to connect the CG-1042/U and CG-1030/U to the transmitting and receiving sections of a C-band antenna when using two reflectors.

NOTE. When one reflector is used, one antenna assembly is required for the receiving antenna and one antenna assembly for the transmitting antenna. Connect the CG-1042/U and CG-1030/U as shown on the receiving section or transmitting section for a C-band antenna when using one reflector.

(*d*) Connect the MX-1483/G's (75 ft) with the chain shackles to the AT-414/TRC as shown in figure 2-27.

(*e*) Cable whipping, caused by erratic winds, will damage the CG-1030/U cable connections and cause unreliable operation. To prevent damage and unreliable operation, secure the CG-1030/U with additional electrical clamps and tape the CG-1030/U with Insulating Tape, Electrical TL-192 to the antenna assembly as follows:

1. *Single-reflector operation* (fig. 2-27).

(a) Securely tape the T-harness and the CG-1042/U to the AT-414/TRC with Insulating Tape, Electrical TL-192.

(b) Secure the CG-1030/U with one additional electrical clamp to the AT-414/TRC.

(c) Securely tape the CG-1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL-192.

2. *Double-reflector operation* (fig. 2-8).

(a) Securely tape each T-harness and CG-1042/U to the AT-414/TRC with Insulating Tape, Electrical TL-192.

(b) Secure each CG-1030/U with one additional electrical clamp to the AT-414/TRC.

(c) Securely tape each CG-1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL-192.

(9) *Assembly and installation of D-band antenna.*

(*a*) Refer to figure 2-29 and assemble the D-band element assemblies on the AT-414/TRC. Be sure the element assemblies are facing toward the sky.

(*b*) Refer to figure 2-30 to connect the CG-1370/U, CG-1544/U, and CG-1030/U to the transmitting and receiving section of a D-band antenna when using two reflectors.

Note. When one reflector is used, one antenna assembly is required for the receiving antenna and one antenna assembly for the transmitting antenna. Connect the CG-1370/U, CG-1544/U, and CG-1030/U as shown in the receiving section or transmitting section for a D-band antenna when using one reflector.

(*c*) Connect the MX-1483/G's (75 ft) with the chain shackles to the AT-414/TRC's as shown in figure 2-30.

(*d*) Cable whipping, caused by erratic winds, will damage the CG-1030/U cable connections and cause unreliable operation. To prevent damage and unreliable operation secure the CG-1030/U with additional electrical clamps and tape the CG-1030/U with Insulating Tape, Electrical TL-192 to the antenna assembly as follows:

1. *Single-reflector operation* (fig. 2-30).

(a) Securely tape each CG-1370/U and T-connector to the AT-414/TRC with Insulating Tape, Electrical TL-192.

(b) Securely tape each CG-1544/U and T-connector to the AT-414/TRC with Insulating Tape, Electrical TL-192.

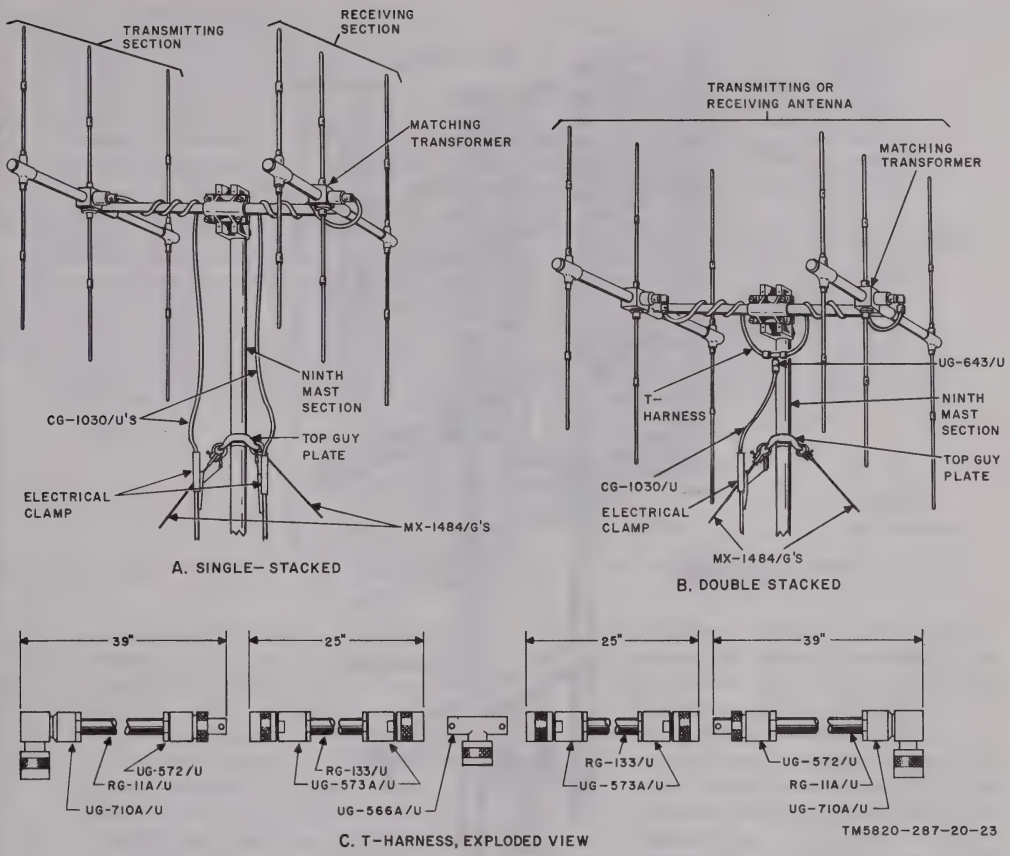


Figure 2–25. A-band antenna connected for single-stacked and double-stacked operation with exploded view of T-harness.

(c) Secure the CG–1030/U with one additional electrical clamp to the AT–414/TRC.

(d) Securely tape each CG–1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL–192.

2. *Double-reflector operation* (fig. 2–30).

(a) Securely tape each CG–1370/U and T-connector to the AT–414/TRC with Insulating Tape, Electrical TL–192.

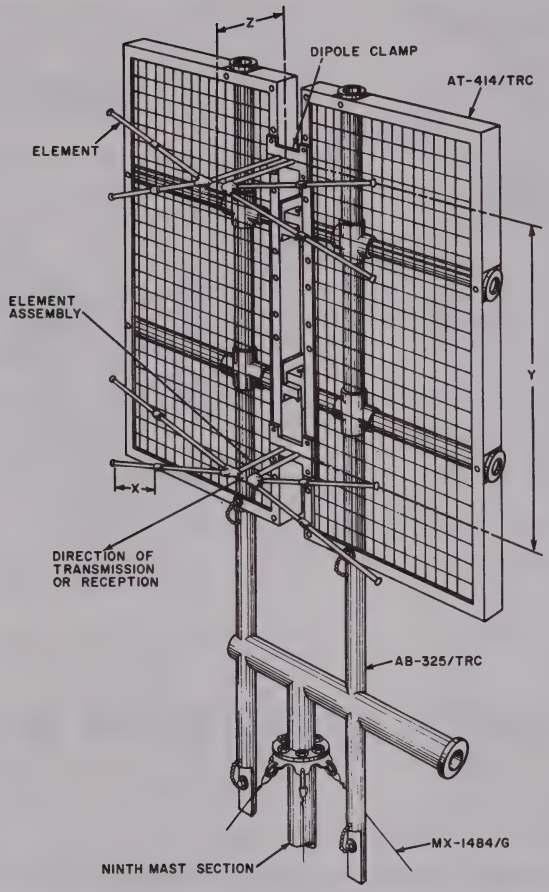
(b) Securely tape each CG–1544/U and T-connector to the AT–414/TRC with Insulating Tape, Electrical TL–192.

(c) Secure each CG–1030/U with one additional electrical clamp to the AT–414/TRC.

(d) Securely tape each CG–1030/U to the center of the ninth mast section with Insulating Tape, Electrical TL–192.

(10) *Assembly and installation of F-band antennas (AN/TRA–25 only)* (fig. 2–31).

(*a*) Install the AS–1083/TRA–25's on the AB–325/TRC. Be sure that the cov-



NOTES:

1. ELEMENT, ELEMENT ASSEMBLY, AND DIPOLE CLAMP SETTINGS ARE AS FOLLOWS:

RF CHANNEL NUMBER	RF CHANNEL FREQUENCY (MC)	SETTING X, Y, AND Z
1 THROUGH 71	100 TO 135	B1–B71
72 THROUGH 170	135 TO 185	B72–B170
171 THROUGH 250	185 TO 225	B171–B250

2. ELEMENT SETTINGS X ARE MARKED ON ELEMENT.
3. ELEMENT ASSEMBLY SETTINGS Z ARE MARKED ON ELEMENT ASSEMBLY.
4. DIPOLE CLAMP SETTINGS Y ARE ON REFLECTOR.

TM5820-287-20-24

Figure 2–26. B-band antenna assembled and installed on ninth section of mast for horizontal polarization, using one AT–414/TRC.

ered portions of the AS–1083/TRA–25's are facing toward the sky.

(b) Connect the CG–1886/U to the transmitting section and the receiving section as shown.

(c) Connect the MX–1483/G's (75 ft) with the chain shackles to the AS–1083/TRA–25's.

(d) Cable whipping, caused by erratic winds, will damage the CG–1886/U

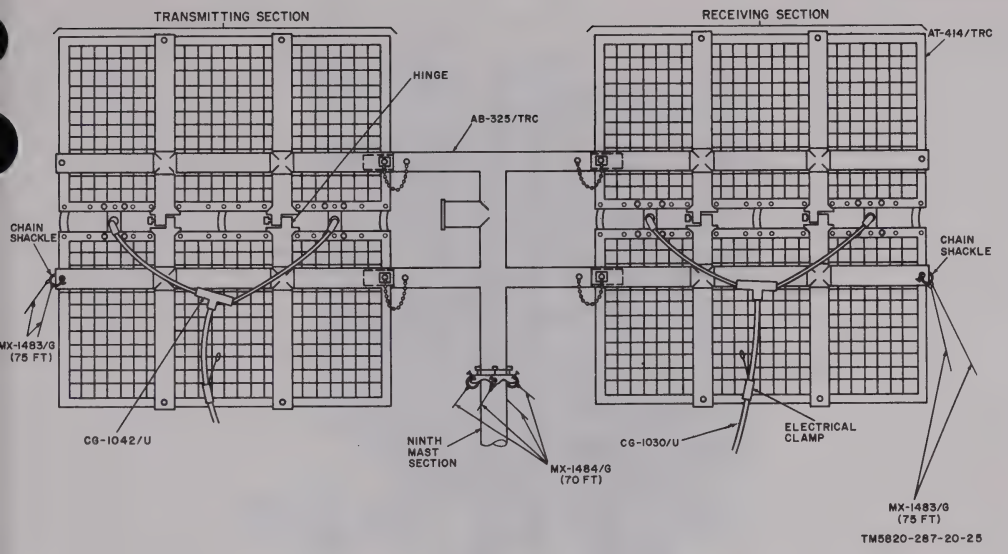


Figure 2–27. B-band or C-band antenna using two AT–414/TRC's rear view showing CG–1042/U and CG–1030/U connections.

cable connections and cause unreliable operation. To prevent damage and unreliable operation, secure the CG–1886/U with additional electrical clamps and tape the CG–1886/U to the antenna assembly with Insulating Tape, Electrical TL–192 as follows:

1. Secure each CG–1886/U with one additional electrical clamp to the top guy plate.
2. Securely tape each CG–1886/U to the center of the ninth mast section with Insulating Tape, Electrical TL–192.

(11) *Assembly and installation of F-band (AN/TRA–25A) or J-band (0A–3668A/TRC–24) antenna* (fig. 2–32, 2–33, 2–34 and 2–35).

(*a*) *Assembly.*

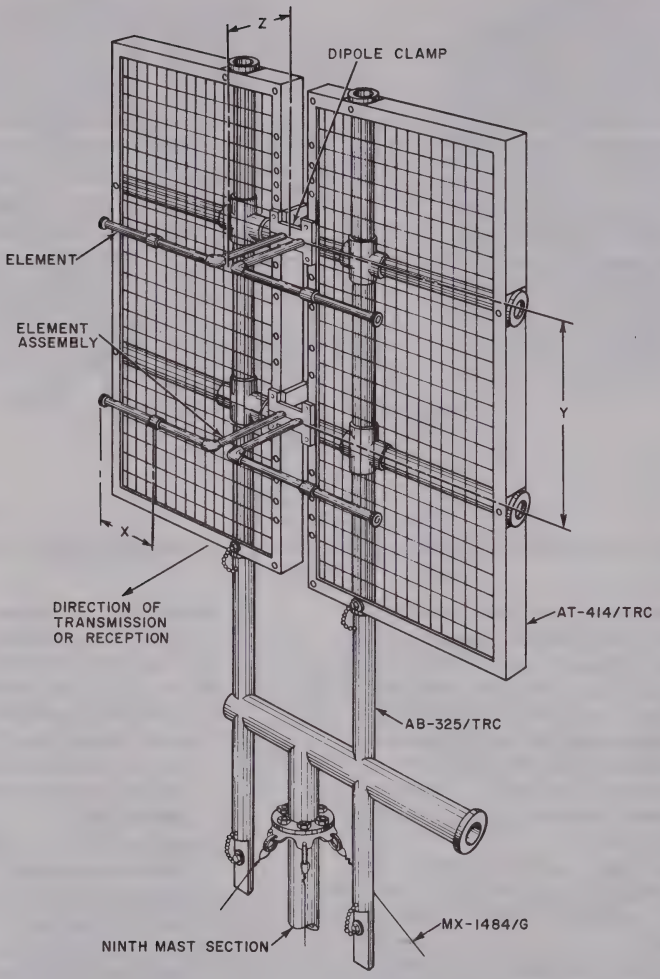
1. Loosen the locking bolt and raise the elevation bar (fig. 2–9).
2. Slide the elevation bar to the degree setting indicated by the system planner.
3. Secure the elevation bar with the locking bolt.

(*b*) *Polarization.* Antenna AT–903/G is mounted for vertical polarization on the antenna mounting (fig. 2–32). When horizontal polarization (fig. 2–33) is required, proceed as follows:

1. Extend the leaf on each dropleaf pin that secures the AT–903/G to the antenna mounting and remove each dropleaf pin.
2. Separate the AT–903/G from the antenna mounting.
3. Turn the AT–903/G to the horizontal mounting position.
4. Align the holes on the antenna mounting with the holes on the mounting studs of the AT–903/G.
5. Insert a dropleaf pin through each mounting stud and retract the leaf of each dropleaf pin to secure the AT–903/G to the antenna mounting.

(*c*) *Installation.*

1. Install the AT–903/G's on the AB–720/G as shown in figure 2–33 for vertical polarization or figure 2–34 for horizontal polarization. Be sure



NOTES:

1. ELEMENT, ELEMENT ASSEMBLY, AND DIPOLE CLAMP SETTINGS ARE AS FOLLOWS:

RF CHANNEL NUMBER	RF CHANNEL FREQUENCY (MC)	SETTING X, Y, AND Z
25 THROUGH 120	225 TO 320	C25-C120
121 THROUGH 200	320 TO 400	C121-C200

2. ELEMENT SETTINGS X ARE MARKED ON ELEMENT.
3. ELEMENT ASSEMBLY SETTINGS Z ARE MARKED ON ELEMENT ASSEMBLY.
4. DIPOLE CLAMP SETTINGS Y ARE MARKED ON REFLECTOR.

TM5820-287-20-26

Figure 2-28. C-band antenna assembled and installed on ninth section of mast for horizontal polarization, using one AT-414/TRC.

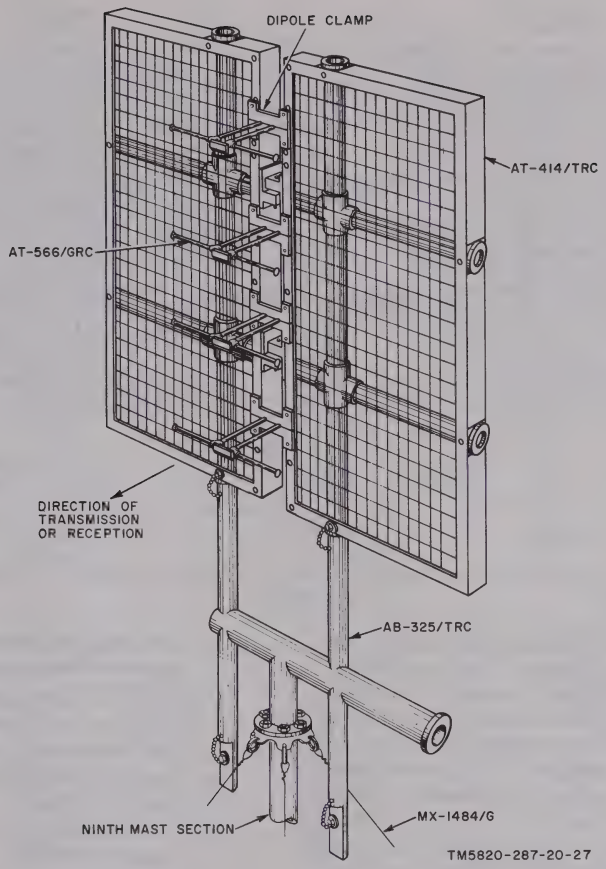


Figure 2-29. D-band antenna assembled and installed on ninth section of mast for horizontal polarization, using one AT–414/TRC.

that the radiating ends of the AT–903/G's are facing toward the sky.

2. Secure each antenna mounting to the AB–720/G with the antenna clamps as shown.

(*d*) *Connections* (*F-band, AN/TRA–25A*). Connect the two CG–1030A/U's to the AT–903/G's as shown in figure 2–33 or 2–34 Cable whipping, caused by erratic winds, will damage the CG–1030A/U cable connections and cause unreliable operation. Secure the CG–1030A/U's with additional electrical clamps and tape the CG–1030A/U's to the antenna assembly as follows:

1. Secure each CG–1030A/U with an additional electrical clamp to the top guy plate.
2. Securely tape each CG–1030A/U to the center of the ninth mast section and to antenna support AB–720/G with Insulating Tape, Electrical TL–192.

(*e*) *Connections* (*J-band, OA–3668A/TRC–24*). Connect the antenna cable assembly, consisting of two CG–2636/U's

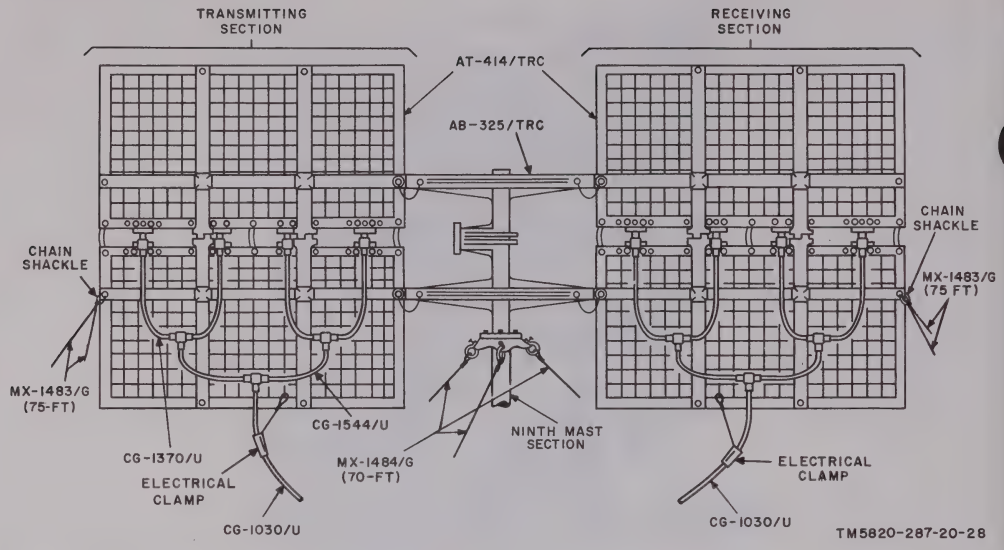


Figure 2–30. D-band antenna using two AT–414/TRC's rear view showing CG–1370/U, CG–1544/U, and CG–1030/U connections.

(6 ft) and one CG–1859/U (80 ft), as shown in figures 2–34 and 2–35. Cable whipping caused by erratic winds will damage the CG–1859/U and CG–2636/U connectors and cause unreliable operation. To prevent this damage, perform the procedures given in *1* and *2* below.

1. Secure each CG–1859/U to the top guy plate of the AB–720/G with the snap fasteners on the electrical cable clamp assembly.

2. Securely tape each CG–2636/U to AB–720/G with Insulating Tape, Electrical TL–192.

(12) *Erecting and securing antenna assembly.*

(*a*) Attach an electrical clamp to each CG–1030/U (A-, B-, C-, and D-bands), CG–1886/U (F-band, AN/TRA–25), CG–1030A/U, (F-band AN/TRA–25A), or CG–1859/U (J-band, OA–3668A/TRC–24), and attach the electrical clamps to the center guy plate (fig. 2–20).

***Caution:* To avoid unnecessary power loss, be sure that there are no kinks or bends in the antenna cables and that the cables are secured on opposite sides of the mast.**

(*b*) Check all guys, guy ropes, and the block and tackle assembly to see that they are properly secured.

(*c*) Check to be sure the mast is slightly bowed (fig. 2–23).

(*d*) Be sure that one end of each MX–1483/G (75 ft) is properly secured (fig. 2–27, 2–30, or 2–31) and the other end is free.

***Warning:* Before performing the procedure given in *e* below, station a man at guy stake No. 1 to adjust the guys. This action will prevent the mast from toppling over on the man using the block and tackle assembly.**

(*e*) Pull the free end of the block and tackle assembly to raise the antenna assembly as shown in figure 2–36.

(*f*) When the antenna assembly is in the upright position, remove the guys (one at a time) from the gin pole cap (fig. 2–22) and secure them to the guy stake clamp on guy stake No. 3 as shown in figure 2–21.

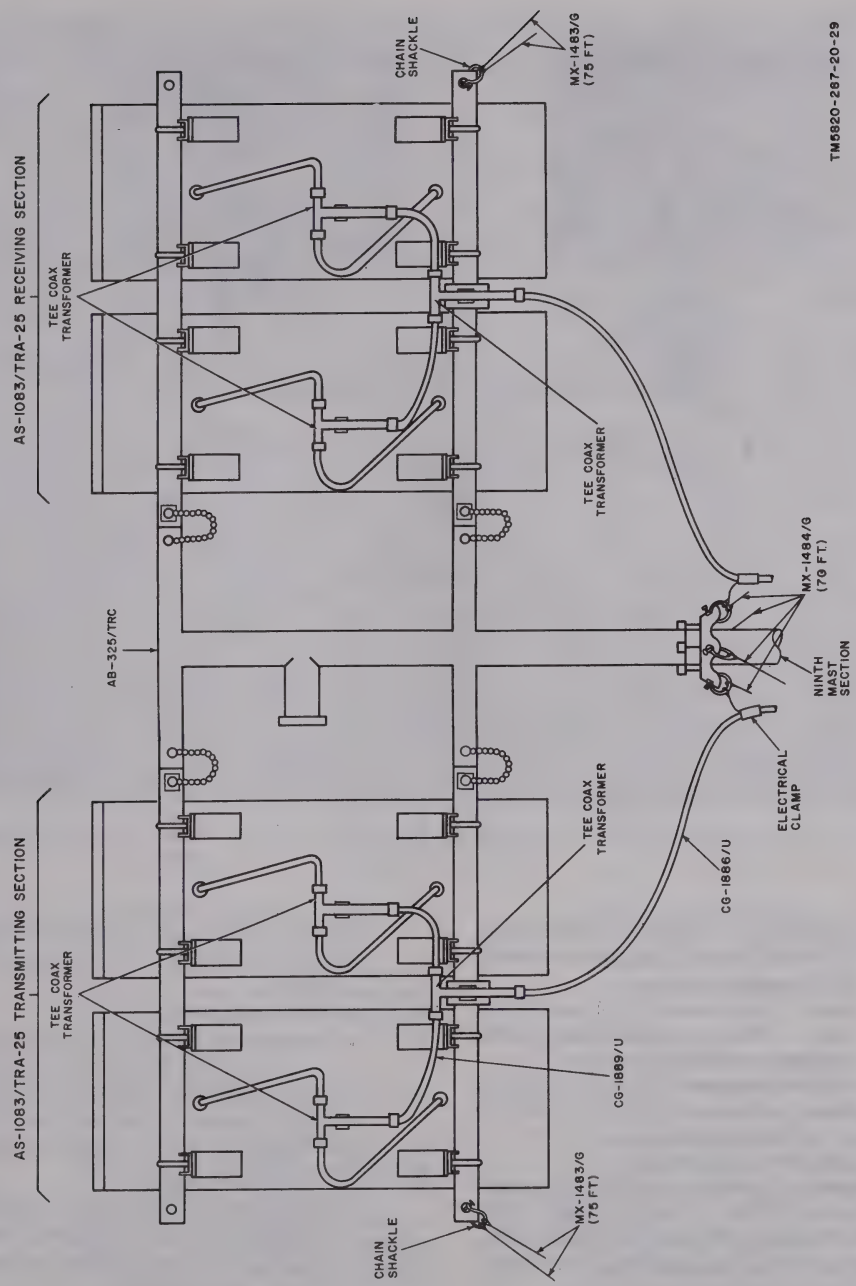


Figure 2-31. F-band (AN/TRA-25) antenna assembled and installed on ninth section of mast for horizontal polarization.

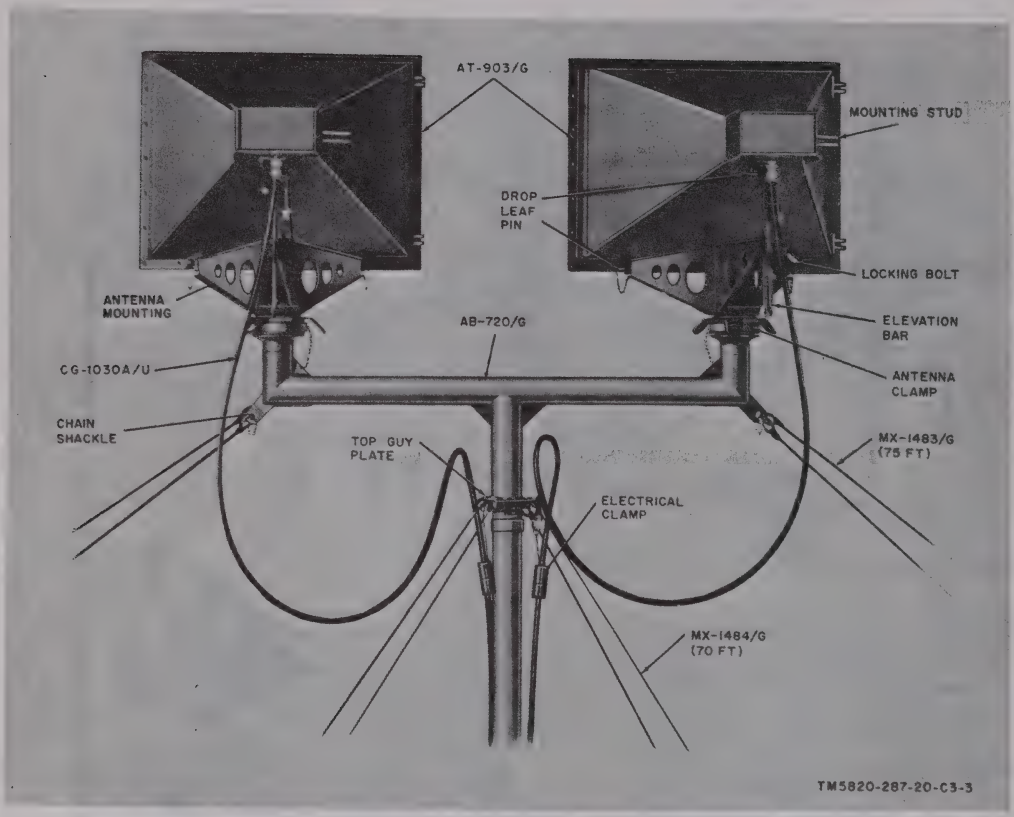


Figure 2–32. F-band (AN/TRA–25A) antennas assembled and installed on ninth section of mast for vertical polarization.

(*g*) Tighten all guys except the MX–1483/G (75 ft) to secure the antenna assembly in the upright position.

(*h*) Remove guy ropes No. 1 and No. 2 (fig. 2–22), the block and tackle assembly, and the gin pole cap.

(*i*) Coil the loose ends of the guys and tape them to the taut sections of the guys as shown in figure 2–21.

b. Radio and Power Components.

(1) *Locating.* Locate the radio components (R–417(*)/TRC, T–302(*)/TRC, PP–685(*)/TRC, TF–167/TRC, ME–82/U, and J–532/U) as described in (*a*) below. Locate the power components (PU–286/G and SA–331/U) as described in (*b*) below.

(*a*) *Radio components.*

1. Locate the radio components as close as possible to the antenna assembly.

2. Limit the CG–1030/U's (CG–1886/U, F-band (AN/TRA–25); CG–1030A/U, F-band (AN/TRA–25A)) to 80-foot lengths.

3. Limit the J-band antenna cable assembly to 6-foot lengths for the two CG–2636/U end sections, and to 80-

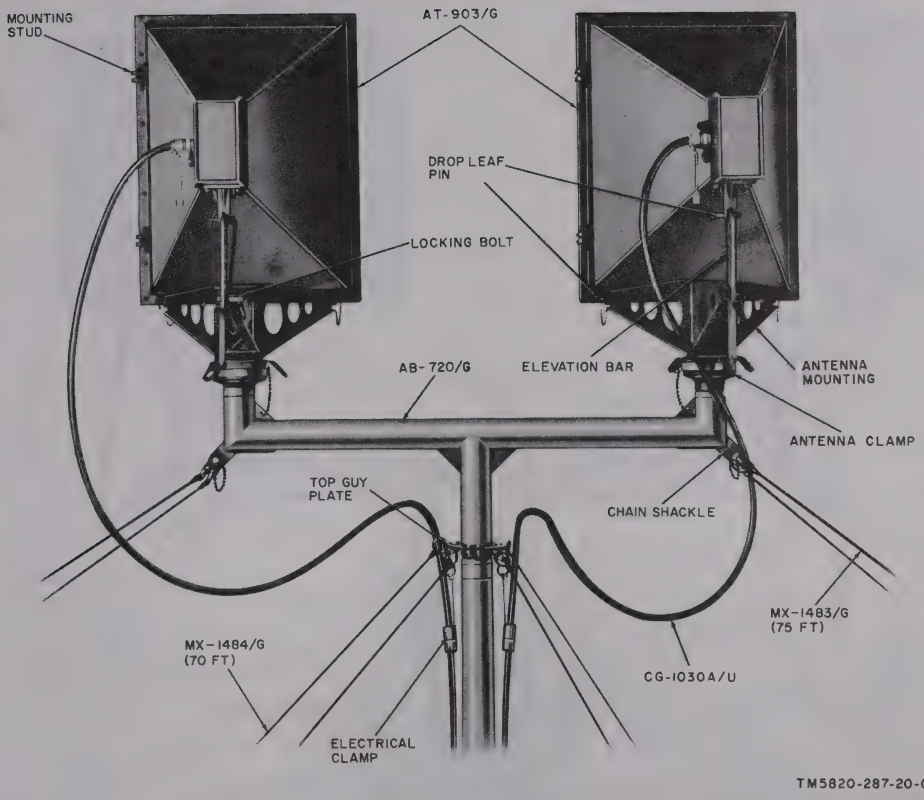


Figure 2-33. F-band (AN/TRA-25A) antennas assembled and installed on ninth section of mast for horizontal polarization.

foot lengths for the CG-1859/U center section.

Note. If the antenna cable exceeds a recommended length of 92 feet (two 6-foot (CG-2636/U) sections and one 80-foot (CG-1859/U)) section, the loss in power may be excessive.

4. Place the radio components in a shelter or in a sheltered location.
5. Provide a dry, secure, vibration-free footing that will safely support the components in a level position.
6. If the radio components of a radio repeater set are located in the same inclosure, allow sufficient room to minimize interference.
7. Provide sufficient space for operating and maintaining the radio components.
8. Provide adequate lighting and ventilation.

(*b*) *Power components.*

1. Locate the PU-286/G's and the SA-331/U as far away from the radio components ((*a*) above) and the receiving antenna as the power cord will permit (approximately 150 feet).
2. Locate the PU-286/G's on firm dry ground.
3. In dry areas, locate the PU-286/G's in a trench to muffle the noise.
4. If the PU-286/G's are operated

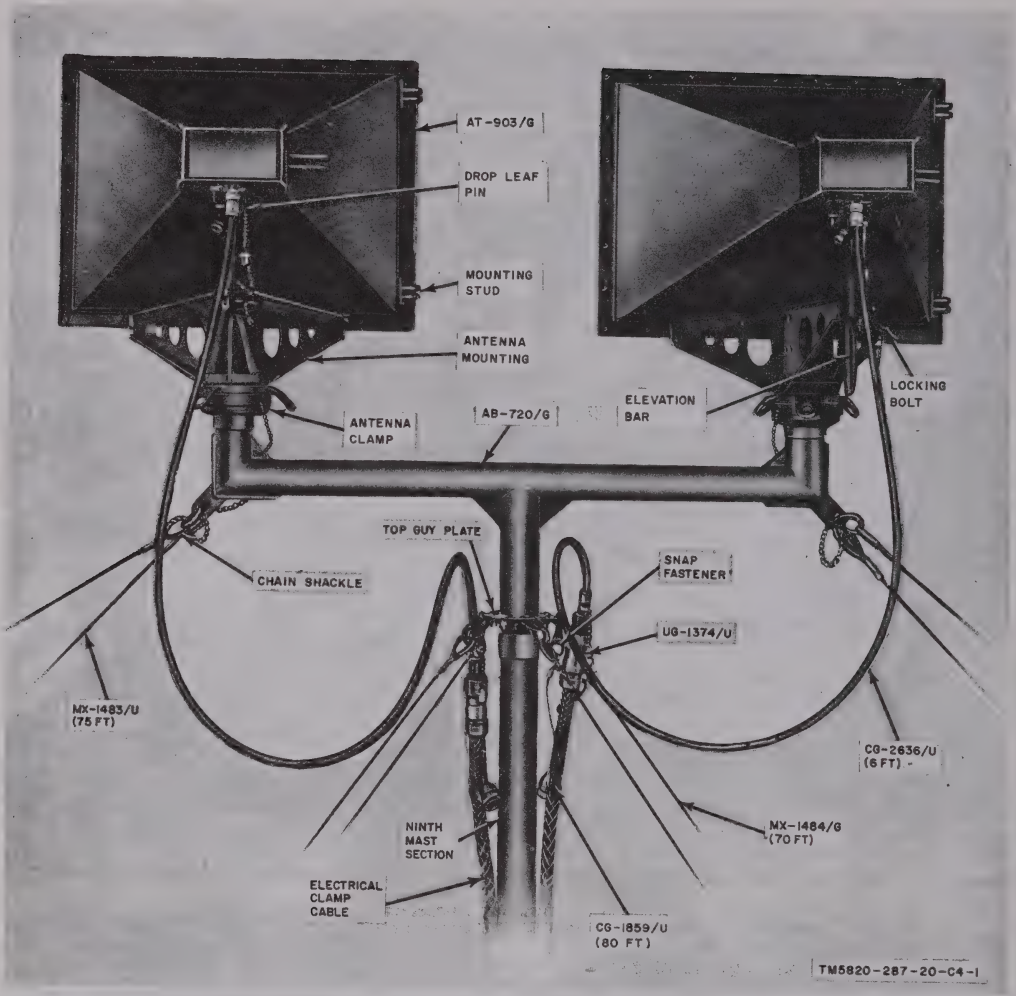


Figure 2-34. J-band antenna assembled and installed on ninth section of mast for vertical polarization.

within a building, make sure the exhaust fumes are carried away from the operating personnel.

Warning: **Exhaust fumes contain carbon monoxide which is tasteless, odorless, and a *deadly poison*.**

(2) *Installing.*

(*a*) *Radio components.* A typical installation of the radio components is shown in figure 2-37. Since installation of the radio components will vary with the location ((1)(*a*) above) and the available space, adapt the following instructions to the prevailing situation.

1. Remove the covers from the carrying cases of the radio components.

Caution: **Use a screwdriver or pliers to release the catches on the carrying cases. Painful**

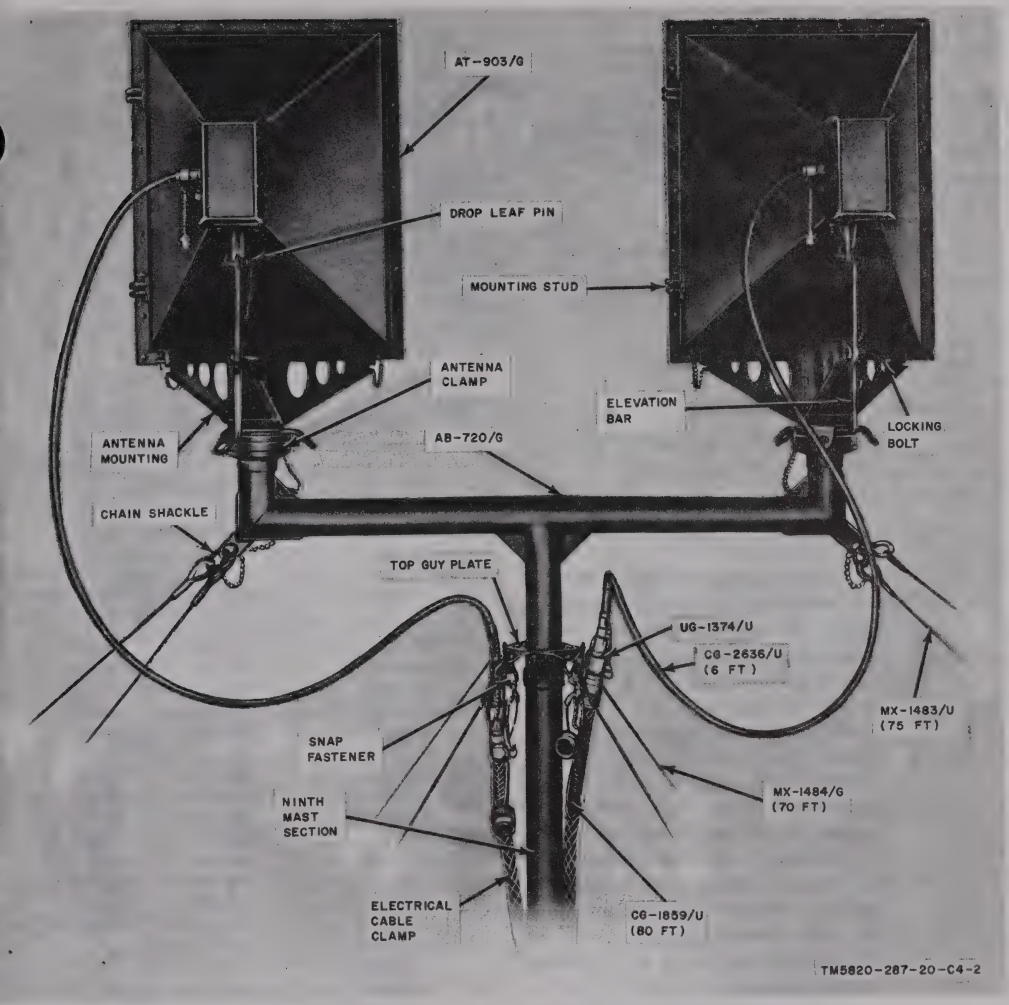


Figure 2-35. J-band antenna assembled and installed on ninth section of mast for horizontal polarization.

hand injuries may result without the use of tools.

2. Stack the radio components on a solid support (table, bench, or shelf). The arrangement of the equipment is flexible, but limited by the lengths of the interconnecting cables.
3. Secure each carrying case to the one below it with the carrying straps on the sides of each case.
4. Pull out the vibration mount (A, fig. 4-5) of the T-302(*)/TRC.

Caution: **Do not move the T-302(*)/TRC unless the vibration mount is pushed in. If the T-302(*)/TRC is moved with the vibration mount pulled out, the components in the**

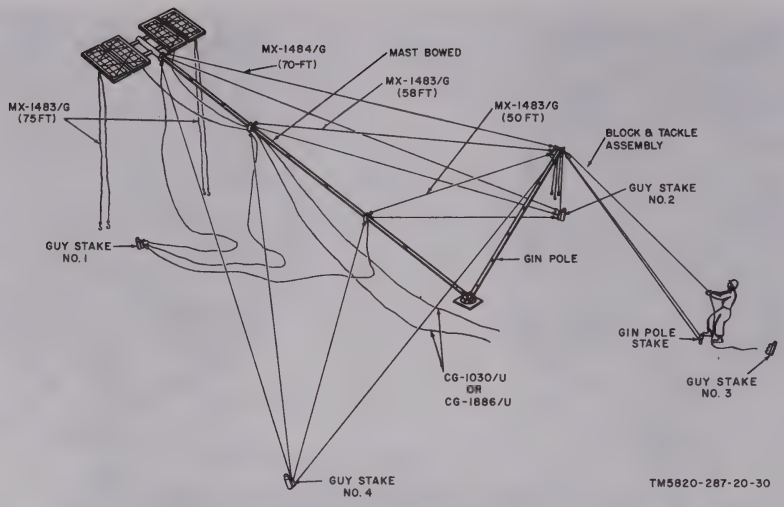


Figure 2-36. Raising antenna assembly by use of block and tackle assembly.

exciter chassis of the T-302(*)/TRC may become damaged.

5. Install the correct tuning head, determined by the desired RF channel frequency (para 1-5), in the R-417(*)/TRC and the T-302(*)/TRC, and secure the tuning heads.
6. Install the dummy filter in the T-302(*)/TRC and R-417(*)/TRC. Determine from chart below the correct bandpass filters to be installed later in the tuning procedure.
7. The dummy filters are installed to prevent damage to the final amplifier in the T-302(*)/TRC, and loss of marginal signal in R-417(*)/TRC during tune up.

Note. Bandpass filters are not installed for F-band operation.

Band	RF channel No.	Frequency range (mc)	Bandpass filter
A	1-34	50-58. 5	F-238/U.
A	34-68	58. 5-67	F-239/U.
A	68-102	67-75	F-240/U.
A	102-136	75-84	F-241/U.
A	136-170	84-92. 5	F-242/U.
A	170-204	92. 5-100	F-243/U.
B	1-42	100-121	F-192/U.
B	43-84	121-142	F-193/U.
B	85-126	142-163	F-194/U.
B	127-168	163-184	F-195/U.
B	169-210	184-205	F-196/U.
B	211-250	205-226	F-197/U.
C	26-53	223-253	F-199/U.
C	54-83	253-283	F-200/U.
C	84-113	283-313	F-201/U.
C	114-143	313-343	F-202/U.
C	144-173	343-373	F-203/U.
C	174-200	373-403	F-204/U.
D	27-101	400-450	F-233/U.
D	101-134	450-500	F-134/U.
D	134-167	500-550	F-235/U.
D	167-200	550-600	F-236/U.
J	Blue A-1 through blue A-200.	1, 350-1, 400	F-691/TRC-24.
J	Blue B-1 through blue B-250.	1, 400-1, 525	F-691/TRC-24.
J	Red A-1 through red A-200.	1, 525-1, 575	F-691/TRC-24.
J	Red B-1 through red B-250.	1, 575-1, 700	F-691/TRC-24.
J	Green A-1 through green A-200.	1, 700-1, 750	F-691/TRC-24.
J	Green B-1 through green B-250.	1, 750-1, 875	F-691/TRC-24.

(*b*) *Power components.* No special procedures are required for installation of the SA–331/U. Refer to TM 11–6115–204–10, –20, –35 for detailed instructions on the installation of the PU–286/G's.

(3) *Connecting.* Follow the procedures given in (*a*) below to connect a radio terminal, and in (*b*) below to connect a radio repeater. Follow the procedures given in (*c*) below to drop channels from a radio repeater, and in (*d*) below to ground the radio terminal or radio repeater.

Note. When two sources of power are connected to the INPUT NO. 1 and INPUT NO. 2 connectors of the SA–331/U, both sources of power must be in the same range (that is, both 115 volts alternating current (ac) or both 230 volts ac). The link bar in the J–532/U must be in the proper position to match the sources of power (115 V position for 115 volts ac, or 230 V position for 230 volts ac).

(*a*) *Radio terminal.* Connect the radio terminal for A-, B-, C-, or D-band operation (fig. 2–38), for F-band operation (fig. 2–39) or for J-band operation (fig. 2–40).

(*b*) *Radio repeater.* Connect the radio repeater for A-, B-, C-, or D-band operation (fig. 2–41), for F-band operation (fig. 2–39), or for J-band (figs. 2–40 and 2–41).

(*c*) *Radio repeater with dropped traffic channels.*

1. Connect the radio repeater as shown in figure 2–41 except for connecting the ends of the CX–1512/U's together.
2. Connect the free ends of the CX–1512/U's to the carrier terminal equipment.

Note. If the carrier terminal equipment is located more than 12 feet away, connect spiral-four cable between the CX–1512/U's and the carrier terminal equipment.

(*d*) *Grounding.*

1. Select the lowest and dampest area of the site, preferably in clay or loamy soil.
2. Dig a hole approximately 6 inches deep.
3. Remove any paint or grease from Ground Rod MX–148/G.
4. Drive the MX–148/G into the hole until the top of the MX–148/G is approximately 3 inches from the bottom of the hole.

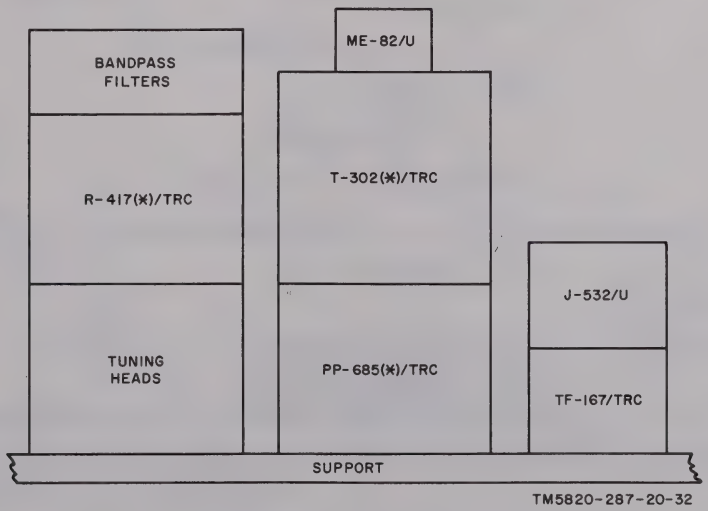


Figure 2–37. Typical radio component installation.

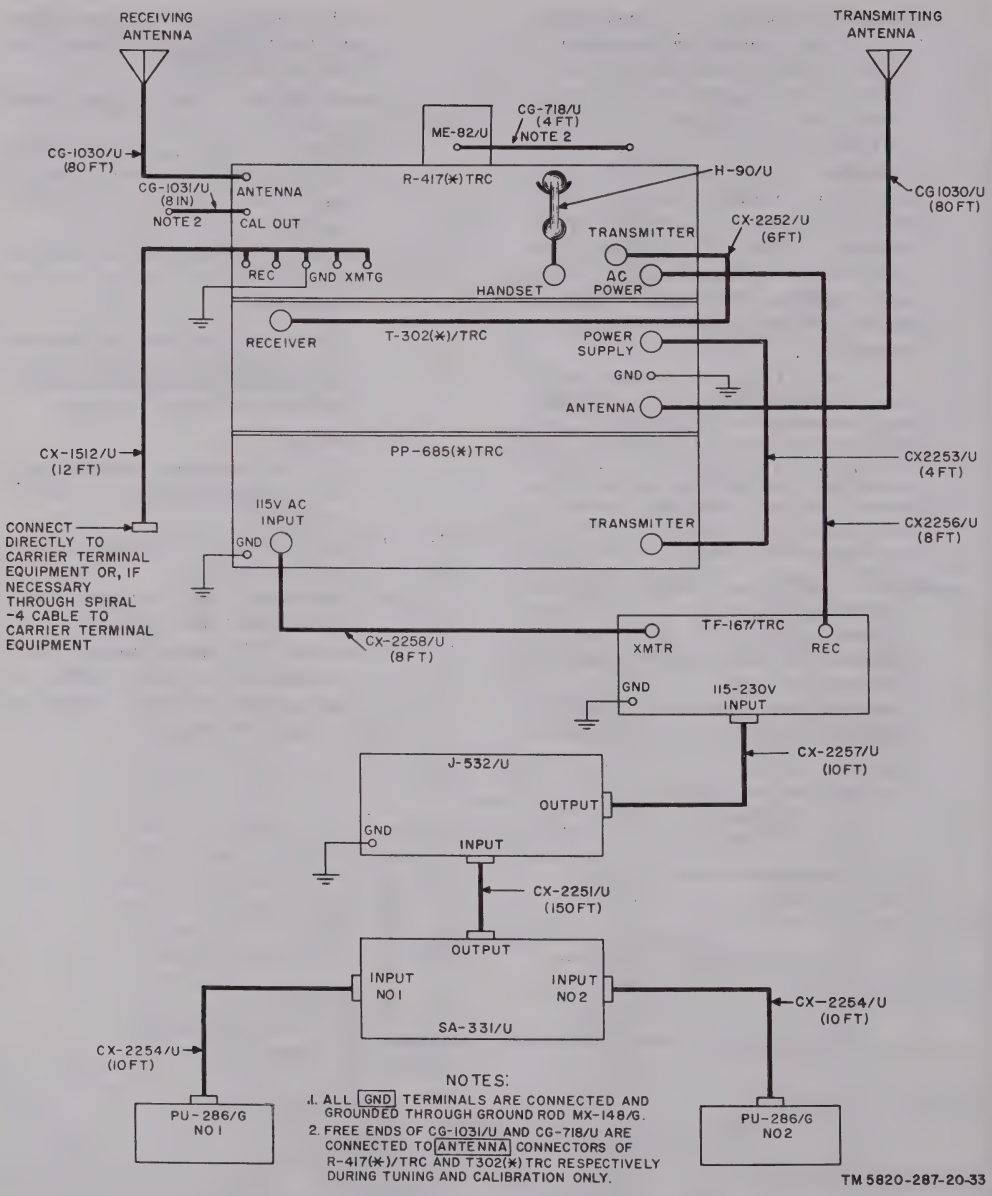
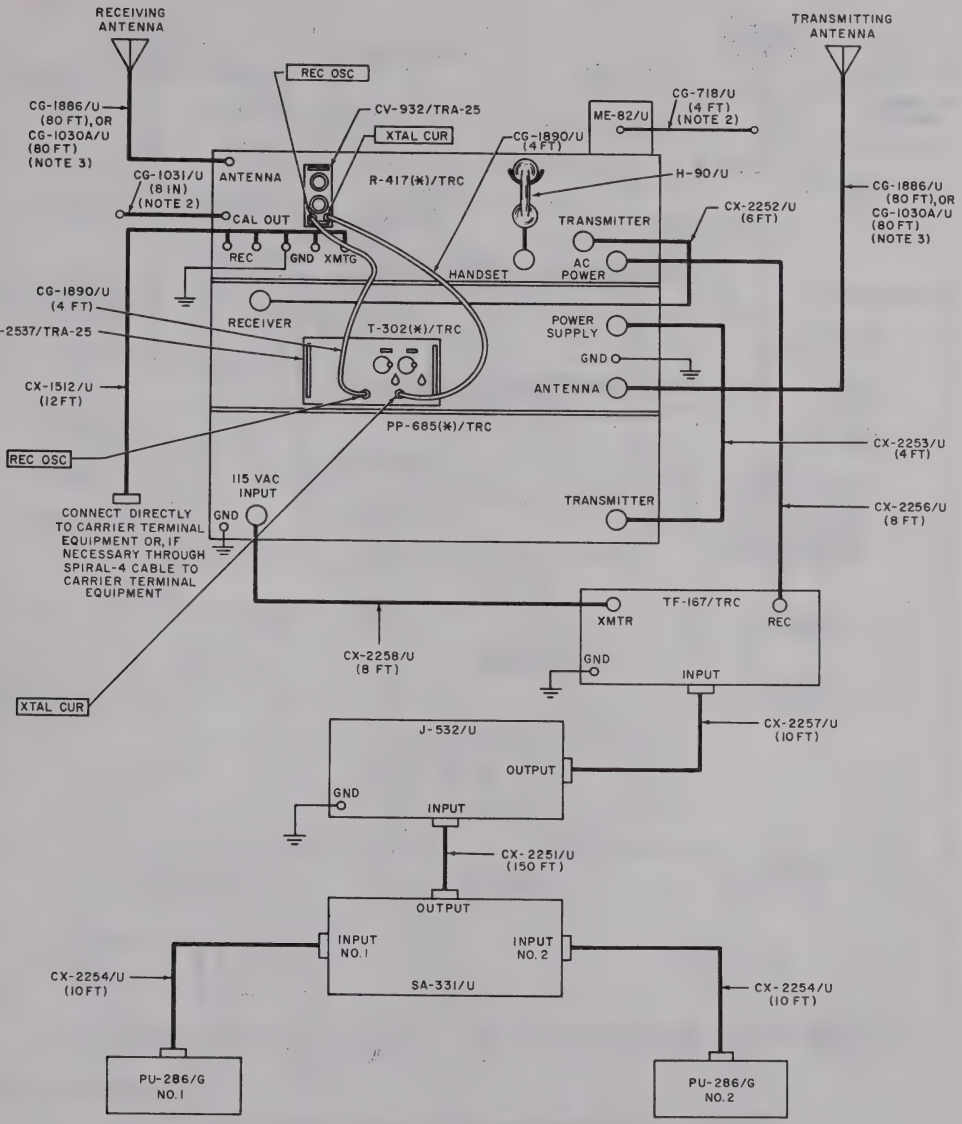


Figure 2-38. Radio terminal connection diagram for A-, B-, C-, or D-band operation.



NOTES:

1. ALL GND TERMINALS ARE INTERCONNECTED AND GROUNDED THROUGH GROUND ROD MX-148/G.
2. FREE ENDS OF CG-1031/U AND CG-718/U ARE CONNECTED TO ANTENNA CONNECTORS OF R-417(*)/TRC AND T-302(*)/TRC RESPECTIVELY DURING TUNING AND CALIBRATION ONLY.
3. CG-1886/U(80 FT) IS USED WITH F-BAND (AN/TRA-25) ONLY, AND CG-1030A/U(80 FT) IS USED WITH F-BAND (AN/TRA-25A).

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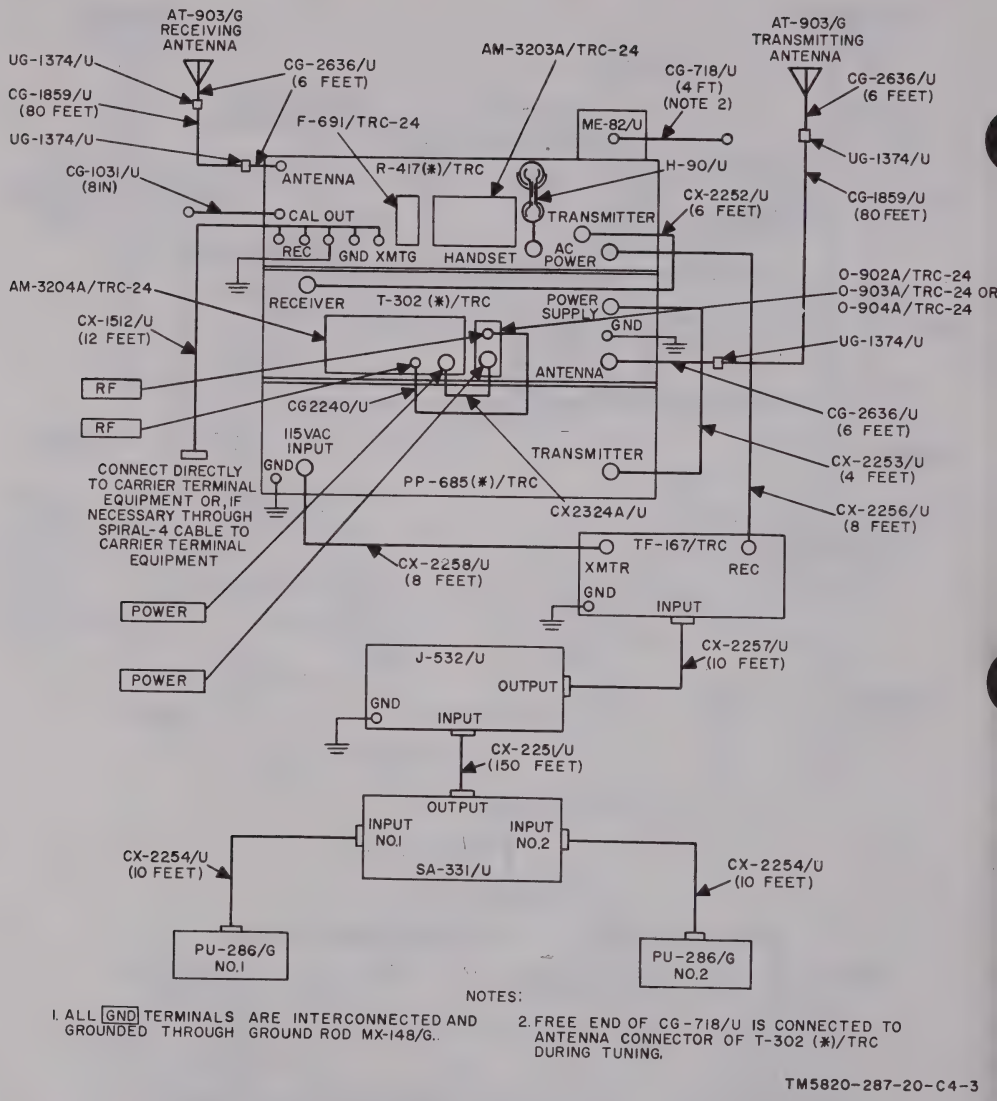
Figure 2-39. Radio terminal connection diagram for F-band operation.



NOTES:

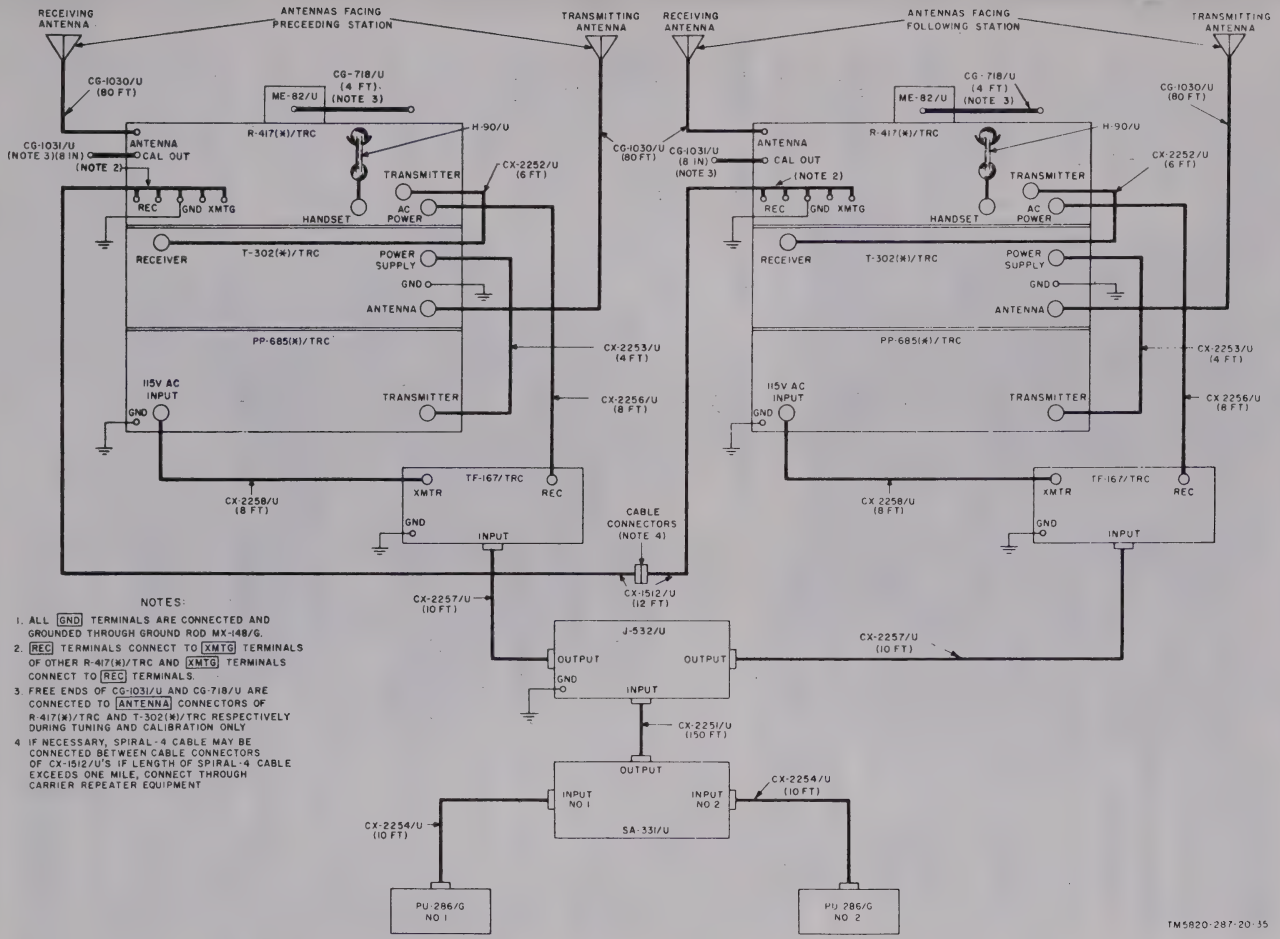
1. ALL GND TERMINALS ARE INTERCONNECTED AND GROUNDED THROUGH GROUND ROD MX-148/G.
2. FREE END OF CG-718/U IS CONNECTED TO ANTENNA CONNECTOR OF T-302 (*)/TRC DURING TUNING.

TM5820-287-20-C4-3

Figure 2-40. Radio terminal connection diagram for J-band operation.

5. Interconnect the wires from the GND terminals (fig. 2-38, 2-39, or 2-41) and secure the wire to the top of the MX-148/G with Clamp TM-106.

6. Saturate the ground around the MX-148/G with water. Keep the ground around the MX-148/G moist at all times.



NOTES:

1. ALL GND TERMINALS ARE CONNECTED AND GROUNDED THROUGH GROUND ROD MX-148/G.
2. REC TERMINALS CONNECT TO XMTG TERMINALS OF OTHER R-417(*)/TRC AND XMTG TERMINALS CONNECT TO REC TERMINALS.
3. FREE ENDS OF CG-1031/U AND CG-718/U ARE CONNECTED TO ANTENNA CONNECTORS OF R-417(*)/TRC AND T-302(*)/TRC RESPECTIVELY DURING TUNING AND CALIBRATION ONLY.
4. IF NECESSARY, SPIRAL-4 CABLE MAY BE CONNECTED BETWEEN CABLE CONNECTORS OF CX-1512/U'S IF LENGTH OF SPIRAL-4 CABLE EXCEEDS ONE MILE, CONNECT THROUGH CARRIER REPEATER EQUIPMENT

Figure 2-41. Radio repeater connection diagram for A-, B-, C-, or D-band operation.

Section II. INITIAL ADJUSTMENT OF EQUIPMENT

Warning: Rectifier CR1 in Power Supply PP-685(*)/TRC is a selenium rectifier. Selenium rectifiers release poisonous fumes when they burn out or arc over. Selenium and its compounds are toxic. Overheated selenium rectifiers should not be handled with bare hands.

2-5. Calibrating R-417(*)/TRC

Perform the following procedures at each station.

a. Disconnect the CG-1030/U (A-, B-, C-, or D-band) (figs. 2-38 and 2-41), the CG-1886/U (F-band, AN/TRA-25) (figs. 2-39 and 2-41), the CG-1030A/U (F-band, AN/TRA-25A) (figs. 2-39 and 2-41), or the CG-2636/U (J-band, OA-3668A/TRC-24) (figs. 2-40 and 2-41) from the ANTENNA connector of the R-417(*)/TRC.

b. Connect the free end of the CG-1031/U to the ANTENNA connector of the R-417(*)/TRC.

c. Perform the preoperational procedures (para 3-4).

d. Operate the PU-286/G (TM 11-940A

e. Operate the 115V AC circuit breaker (PP-685(*)/TRC) to ON.

Note. For location and function of controls or indicators on the radio components, refer to the controls and indicators (paras 3-1 through 3-3).

f. Operate the INCR OUT switch (TF-167/TRC) until the AC VOLTS meter (PP-685(*)/TRC) indicates 115 volts ±5.5.

g. Operate the 150V DC circuit breaker to ON.

h. Allow approximately 10 minutes before proceeding.

i. Operate the DC TEST switch to 150 UPPER SCALE.

j. Adjust the 150V ADJ control for 150-volt indication on the DC VOLTS meter.

k. Operate the POWER circuit breaker (R-417(*)/TRC) to ON.

l. Loosen the camlock fasteners (fig. 2-42) and slide the R-417(*)/TRC approximately halfway out of its case.

Warning: **Dangerous voltages are present in the R-417(*)/TRC. Be extremely careful to avoid the danger of electrical shock.**

m. Operate the MEASURE switch to B+.

n. Adjust the 150V ADJ control (B, fig. 2-42) for a 30-microampere indication on the MEASURE meter.

o. Operate the MEASURE switch to AFC BAL.

p. Operate and hold the AFC DISABLE switch to the on position. (A, fig. 2-42).

q. Adjust the AFC BAL control (A, fig. 2-42) for a minimum indication on the MEASURE meter.

r. Release the AFC DISABLE switch.

s. Operate the MEASURE switch to MTR CAL.

t. Operate the MEASURE switch (T-302(*)/TRC to 1 KC ADJ.

u. Adjust the 1 KC ADJ control for a 0-decibel (db) ±0.5 indication on the MEASURE meter of the T-302(*)/TRC.

v. Adjust the ADJ METER control for a 0-db ±0.5 indication on the MEASURE meter (R-417(*)/TRC).(A, fig.2-42).

w. Slide the R-417(*)/TRC into its case and secure it with the camlock fasteners (B, fig. 2-42).

2-6. Single-Link Radio Section Antenna Orientation

Designate the radio terminal at one end of the radio section as station A (control station). Designate the radio terminal at the other end of the radio section as station B. Perform the procedures given in *a* below if the transmitting and receiving antennas at each station are installed on the same antenna support, and in *b* below if the antennas are installed on separate antenna supports.

a. One Antenna Support.

(1) Perform the following procedures at stations A and B:

(*a*) Perform the tuning procedures (paras 3-5 and 3-6).

(*b*) Adjust the SQUELCH control (R-417(*)/TRC) for a 10-microampere indication on the MEASURE meter.

(2) Perform the following procedures at station A:

(*a*) Loosen the swivel locks (fig. 2-11) and slowly move the gin pole (fig. 2-36) back and forth in a 15° arc until a maximum indication is obtained on the MEASURE meter (R-417(*)/TRC).

(*b*) Tighten the swivel locks (fig. 2-11) and secure the free end of each MX-1483/G (75 ft) (fig. 2-36) to the top hole of the guy stake clamp (fig. 2-21) on the ground stakes.

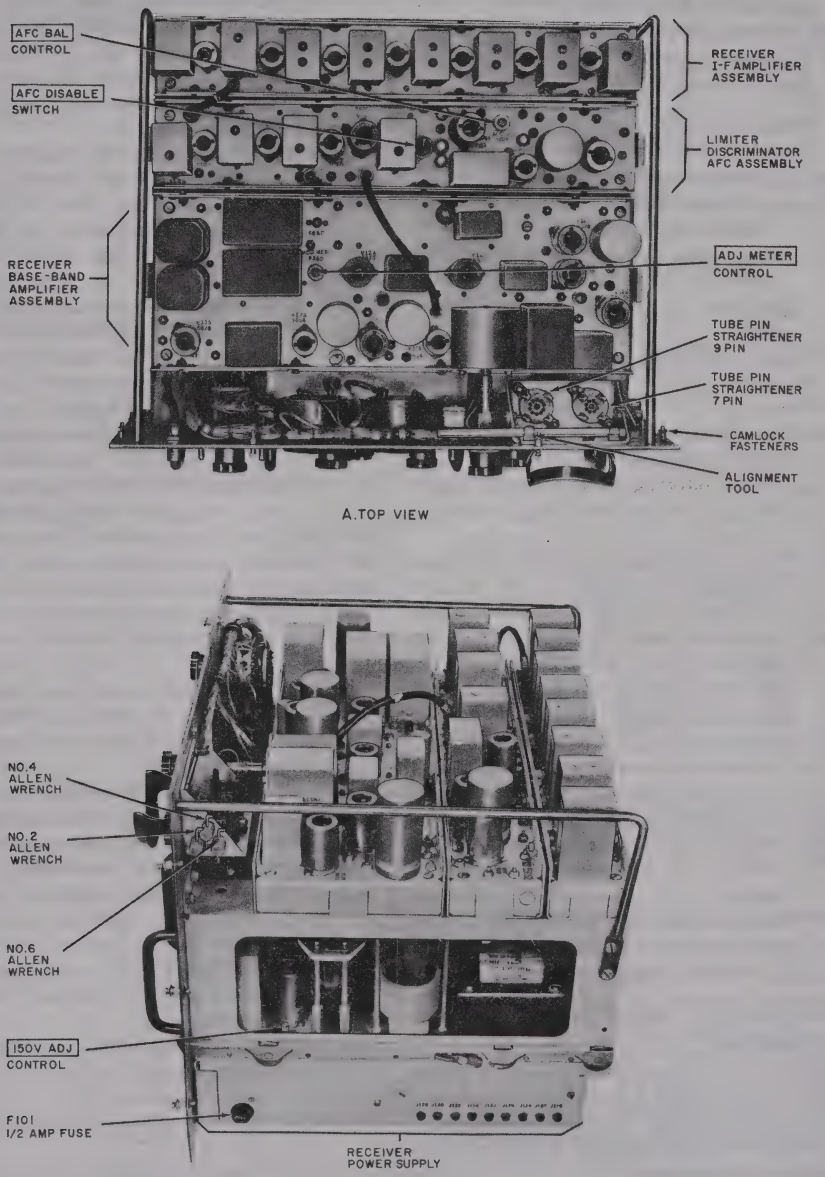


Figure 2-42. R-417(*)/TRC, location of calibration adjustments and tools.

(3) Perform the procedures given in (2)(*a*) and (*b*) above at station B.

b. Two Antenna Supports.

(1) Perform the procedures given in *a*(1)(*a*) and (*b*) above at stations A and B.

(2) Perform the following procedures at station A:

(*a*) Perform the procedures given in *a*(2)(*a*) and (*b*) above for the antenna support of the receiving antenna.

(*b*) Operate the order-wire circuit and instruct the installer at station B to perform the procedures given in (3) below.

(3) When instructed by the installer at station A, perform the following procedures:

(*a*) Loosen the swivel locks (fig. 2–11) and slowly move the gin pole (fig. 2–36) of the antenna support for the transmitting antenna back and forth in a 15° arc.

(*b*) When the installer at station A obtains a maximum indication on the MEASURE meter (R–417(*)/TRC), tighten the swivel locks (fig. 2–11) and secure the free end of each MX–1483/G (75 ft) (fig. 2–36) to the top hole of the guy stake clamp (fig. 2–21) on the ground stakes.

(*c*) Perform the procedures given in *a*(2)(*a*) and (*b*) above for the antenna support of the receiving antenna.

(*d*) Instruct the installer at station A to perform the procedures given in (4) below.

(4) When instructed by the installer at station B, perform the procedures given in (3)(*a*) and (*b*) above.

2–7. Multiple-Link Radio Section Antenna Orientation

Perform the procedures given in *a* below if the transmitting and receiving antennas at each station are installed on the same antenna support, and in *b* below if the antennas are installed on separate antenna supports.

a. One Antenna Support.

(1) Perform the following procedures at all stations:

(*a*) Perform the tuning procedures (paras 3–4, 3–5 and 3–6).

(*b*) Adjust the SQUELCH control (R–417(*)/TRC) for a 10-microampere indication on the MEASURE meter.

(2) Perform the following procedures at the control station:

(*a*) Loosen the swivel locks (fig. 2–11) and slowly move the gin pole (fig. 2–36) back and forth in a 15° arc until a maximum indication is obtained on the MEASURE meter (R–417(*)/TRC).

(*b*) Tighten the swivel locks (fig. 2–11) and secure the free end of each MX–1483/G (75 ft) (fig. 2–36) to the top hole of the guy stake clamp (fig. 2–21) on the ground stakes.

(3) Perform the procedures given in (2)(*a*) and (*b*) above at each station until all antennas from the control station to the end station have been properly oriented.

b. Two Antenna Supports. The procedures given in (1) through (4) below orient the receiving and transmitting antennas for one link of the radio section. These procedures must be repeated for each link with either station acting as the control station.

(1) Perform the procedures given in *a*(1)(*a*) and (*b*) above at all stations.

(2) Perform the following procedures at the control station:

(*a*) Perform the procedures given in *a*(2)(*a*) and (*b*) above for the antenna support of the receiving antenna.

(*b*) Operate the order-wire circuit and instruct the installer of the following station to perform the procedures given in (3) below.

(3) When instructed by the installer at the control station, perform the following procedures:

(*a*) Loosen the swivel locks (fig. 2–11) and slowly move the gin pole (fig. 2–36) of the antenna support for the transmitting antenna back and forth in a 15° arc.

(*b*) When the installer at the control station obtains a maximum indication on the MEASURE meter (R–417 (*)/TRC), secure the free end of each MX–1483/

G (75 ft) (fig. 2-36) to the top hole of the guy stake clamp (fig. 2-21) on the ground stakes.

(*c*) Perform the procedures given in *a*(2) (*a*) and (*b*) above for the antenna support of the receiving antenna.

(*d*) Instruct the installer at the control station to perform the procedures given in (4) below.

(4) Perform the procedures given in (3)(*a*) and (*b*) above at the control station when instructed by the installer of the following station.

2-8. Noise Measurements

Perform the radio section lineup (para 3-8*a*) and make the noise measurements outlined below for each link of the radio section.

a. Operate the 600 OHMS-135 OHMS switch (R-417(*)/TRC) to 135 OHMS.

b. Operate the MEASURE switch (T-302 (*)/TRC) to MOD ADJ.

c. Disconnect the leads of the CX-1512/U (fig. 2-38, 2-39 or 2-41) from the R-417 (*)/TRC.

d. Connect one end of the 0.1-microfarad (μf) capacitor (stored in the running spares drawer of the MK-133/TRC) to one of the REC terminals of the R-417(*)/TRC.

e. Connect the 130-ohm resistor (stored in the running spares drawer of the MK-133/TRC) between the free end of the 0.1-μf capacitor and the GND terminal.

f. Connect the ME-30/U across the 130-ohm resistor. The leads between the ME-30/U and 130-ohm resistor must not exceed 3 feet.

g. Note the indication on the ME-30/U and compare it with the allowable indication provided in the chart below:

Number of Links in radio section	Allowable indication per link (volts)	
	4-channel system	12-channel system
1	0.079	0.025
2	0.056	0.018
3	0.045	0.0142
4	0.040	0.0124
5	0.035	0.0112
6	0.031	0.01
7	0.028	0.0089
8	0.028	0.0089

h. If the indication on the ME-30/U (*g* above) does not exceed the allowable indication, perform the procedures given in (1) through (4) below.

(1) Disconnect the ME-30/U from the 130-ohm resistor.

(2) Disconnect the 130-ohm resistor and the 0.1-μf capacitor from the R-417(*)/TRC.

(3) Store the 130-ohm resistor and the 0.1-μf capacitor in the running spares drawer of the MK-133/TRC.

(4) Perform the stopping procedures (para 3-11).

i. If the indication on the ME-30/U (*g* above) exceeds the allowable indication, perform the procedures given in (1) through (4) below.

(1) Increase the INPUT ADJ control (T-302 (*)/TRC) by three positions (3 db).

(2) Decrease the OUTPUT ADJ control (R-417(*)/TRC) by three positions (3 db).

(3) Note the indication on the ME-30/U and compare it to the allowable indication provided in the chart (*g* above).

Note. The settings of the INPUT ADJ control (T-302(*)/TRC) and OUTPUT ADJ control (R-417(*)/TRC) may be increased and decreased respectively by 6 db. If a 6-db change does not reduce the indication on the ME-30/U below the allowable indication, the link must be shortened.

(4) When the correct indications have been obtained on the ME-30/U, perform the procedures given in *h*(1) through (4) above.

Caution: **If the link is to be used with an increased setting of the INPUT ADJ control (T-302(*)/TRC) and a decreased setting of the OUTPUT ADJ control (R-417(*)/TRC), instruct the operator *not* to turn the MEASURE switch (T-302 (*)/TRC) to 1 KC IN, 68 KC IN, MOD 1 KC, or MOD 68 KC IN. Placing the MEASURE switch in any of these positions may damage the MEASURE meter.**

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND INDICATORS

3-1. Transmitter, Radio T-302(*)/TRC, Receiver, Radio R-417(*)/TRC, and Power Equipment

a. Transmitter, Radio T-302(*)/TRC (fig. 3-1).

Control or indicator	Function
INPUT ADJ control	Controls level of incoming signal to transmitter.
MEASURE meter	Indicates level of each signal selected by MEASURE switch.
MEASURE switch	*Switch position* / *Circuit connected* RF CHAN TUNE — RF channel signal. 1 KC ADJ — 1-kc oscillator signal. MTR CAL — 1-kc oscillator signal from calibration circuit. DISCR RF DRIVE — RF channel signal from discriminator. 1 KC IN — 1-kc test signal from carrier equipment. 68 KC IN — 68-kc test signal from carrier equipment. MOD 1 KC IN — 1-kc carrier equipment test signal from discriminator. MOD 68 KC IN — 68-kc carrier equipment test signal from discriminator. MOD ADJ — 1-kc oscillator signal from discriminator.
MTR SENS switch (MOD ADJ only)	When operated to INCR position, increases sensitivity of MEASURE meter circuit when MEASURE switch is in MOD ADJ position.
AFC switch	*Position* / *Action* ON — Applies power to automatic frequency control system. OFF — Disconnects power from automatic frequency control system.
PULSED OSC switch	ODD CHANNELS — Connects odd channel dial to indicate RF channel number. EVEN CHANNELS — Connects even channel dial to indicate RF channel number.
Odd channel dial	Indicates RF channel number when PULSED OSC switch is at ODD CHANNELS.
Even channel dial	Indicates RF channel number when PULSED OSC switch is at EVEN CHANNELS.
XTAL SEL switch	Connects indicated valve crystal in crystal oscillator. *Switch position* / *Crystal connected* DECADE CHANS — 2.5 mc. UNIT CHANS — 1 mc. DISCR CENTER — 10.125 mc.
1KC ADJ control	Adjusts level of 1-kc oscillator signal.
MTR CAL control	Adjusts calibration circuit to 1-kc oscillator signal.
DISCR RF DRIVE control	Adjusts level of RF channel signal from discriminator.
MOD ADJ control	Adjusts level of 1-kc oscillator from discriminator.
DISCR CENTER control	Adjusts discriminator to RF channel signal frequency.
TUNE control	Adjusts frequency of pulsed oscillator.
RF CHANNEL TUNE control	Adjusts frequency of base RF oscillator.
RF CHANNEL dial	Indicates desired RF channel number.
INDEX control	Adjusts index line of RF CHANNEL dial.

Control or indicator	Function
MOD TRIM control	Adjusts reactance modulator to RF channel frequency.
LOCK control	Secures RF CHANNEL TUNE control in fixed position.
AFC control	Permits manual correction of automatic frequency control system.
DRIVER OUTPUT COUPLING control	Adjusts coupling between driver and RF tuners.
DRIVER TUNE control	Adjusts RF channel frequency.
Driver channel dial	Indicates desired RF channel number for A-band on black scale, and B-, C-, D-, and F-bands on white scale.
TEST meter	Indicates magnitude of current for each circuit selected by TEST switch.
TEST switch	Connects TEST meter to circuits indicated.
	Switch position — *Circuit connected* OSC MOD PLATE — Base RF oscillator and reactance modulator plate circuits. DRIVER GRID — Driver grid circuit. DRIVER CATH — Driver cathode circuit. MULT GRID — Multiplier grid circuit. MULT CATH — Multiplier cathode circuit. PWR AMPL GRID — Power amplifier grid circuit. PWR AMPL CATH — Power amplifier cathode circuit. FWD PWR — Forward power portion of directional coupler. REFL PWR — Reflected power portion of directional coupler.
FREQ DRIFT meter	Indicates magnitude of discriminator output signal.
LOW PWR ALARM indicator (red)	Indicates when rf output is too low.
THRESHOLD ADJ control	Adjusts reference level for LOW PWR ALARM indicator.
ALARM switch	*Position* — *Action* REV — Connects buzzer to alarm amplifier to indicate an RF output above reference level. OFF — Disconnects buzzer from alarm amplifier. NOR — Connects buzzer to alarm amplifier to indicate an R output below reference level.

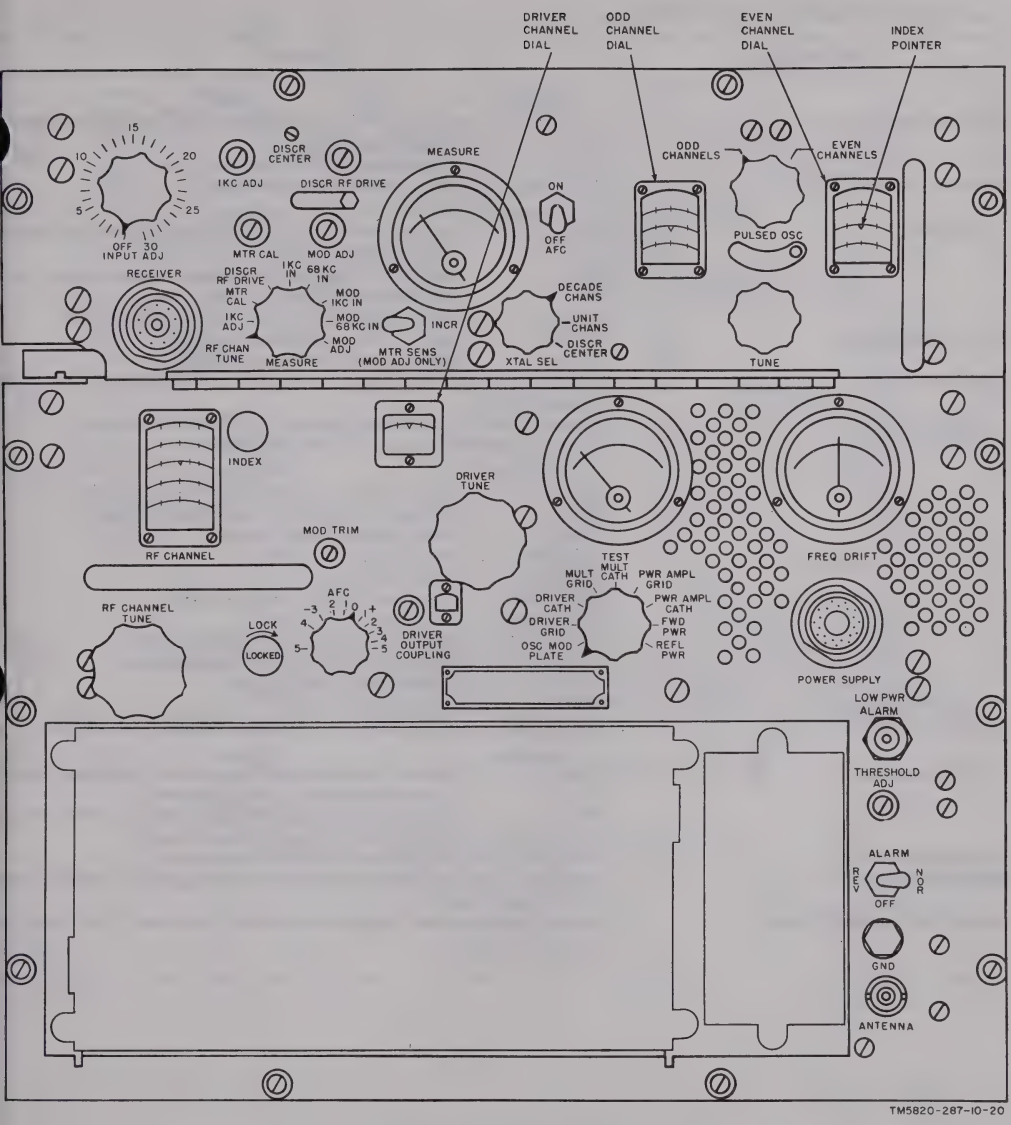


Figure 3-1. Transmitter, Radio T-302(*)/TRC, front panel.

b. Receiver, Radio R-417(*)/TRC (fig. 3-2).

Control or indicator	Function
POWER circuit breaker	*Position* — *Action* ON — Applies power to equipment and protects equipment from overload. OFF — Removes power from equipment.
POWER indicator (amber)	Indicates when power is applied to equipment.
AFC-OFF-CAL switch	*Switch position* — *Action* AFC — Connects power to automatic frequency control motor in amplifier-converter. OFF — Disconnects automatic frequency control circuit and calibration oscillator circuit. CAL — Connects power to calibration oscillator circuit.
RING-TALK switch	RING — Applies power to 1,600-cps oscillator. TALK — Applies power to order-wire circuits.
RING lamp (white)	Indicates when ringing signal is received or transmitted, and when power fails.
MEASURE meter	Indicates level of each signal selected by MEASURE switch.
MEASURE switch	Connects MEASURE meter to circuit indicated. *Switch position* — *Circuit connected* OSC — Grid circuit of oscillator in amplifier-converter. MIX — Grid circuit of mixer in amplifier-converter. SIG LEV — Automatic gain control circuit. 1ST LIM — Grid circuit of 1st limiter. 2D LIM — Grid circuit 2d limiter. AFC BAL — Automatic frequency control circuit. MTR CAL — 1-kc from meter amplifier. 1 KC OUT — 1-kc output from 3d base band amplifier. 68 KC OUT — 68-kc output from 3d base band amplifier. B+ — B+ circuit of power supply.
FREQ DRIFT meter	Indicates level of discriminator output.
OUTPUT ADJ control	Adjusts input signal to base band amplifier and order-wire circuits.
ALARM switch	*Switch position* — *Action* NOR — Connects buzzer across alarm circuit to operate when input signal is below reference level. REV — Connects buzzer across alarm circuit to operate when input signal is above reference level.
ALARM lamp (red)	Indicates when input signal is below reference level.
SQUELCH control	Eliminates weak signals and noise from output and sets reference level for alarm circuit.
600 OHMS-135 OHMS switch	Selects receiver output impedance to match impedance of 600 ohms or 135 ohms load.

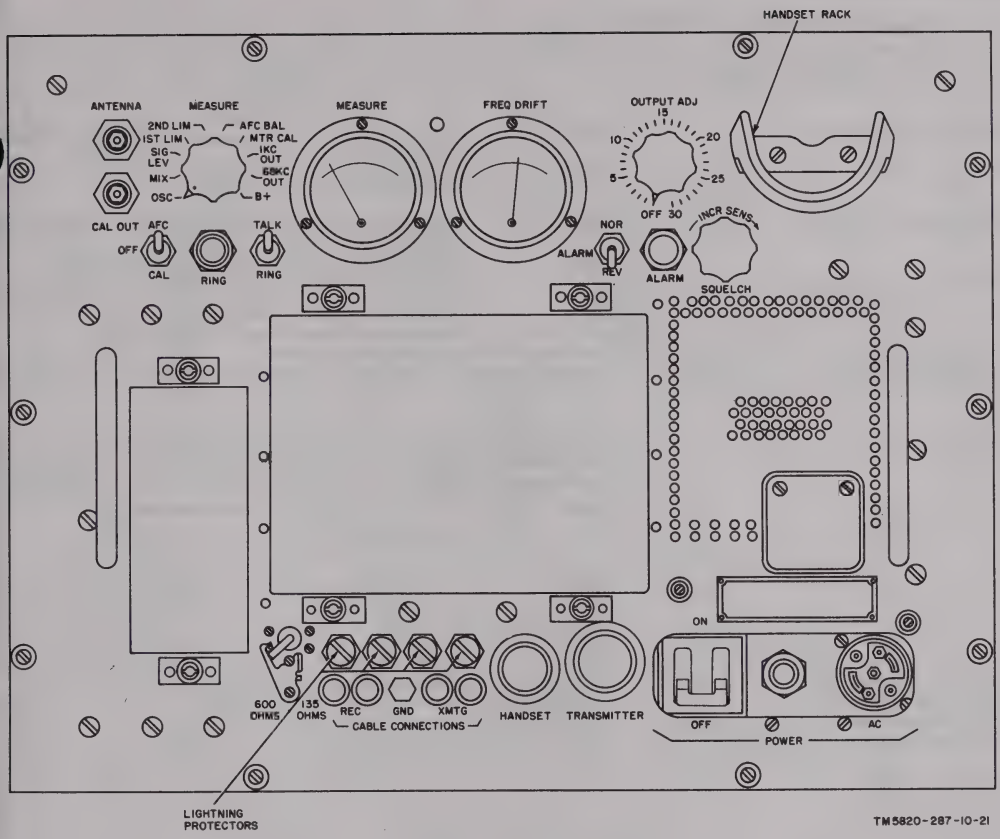


Figure 3–2. Receiver, Radio R–417(*)/TRC, front panel.

c. Power Supply PP–685(*)/TRC (fig. 3–3).

Control or indicator	Function
115V AC circuit breaker	*Position* — *Action* ON — Connects power to equipment and protects from overloads. OFF — Disconnects power from equipment.
150V DC circuit breaker	*Switch position* — *Action* ON — Connects 150 vdc to TRANSMITTER connector and protects equipment from overloads. OFF — Disconnects 150 vdc from the TRANSMITTER.
750V DC circuit breaker	ON — Connects 750 vdc to TRANSMITTER connector and protects equipment from overloads. OFF — Disconnects 750 vdc from TRANSMITTER.
AC VOLTS meter	Indicates voltage applied to equipment.
DC VOLTS meter	Indicates voltages to TRANSMITTER connector as selected by DC TEST switch.
DC TEST switch	*Switch position* — *Action* 150 UPPER SCALE — Applies 150 vdc to DC VOLTS meter. 275 LOWER SCALE — Applies 200 to 350 vdc to DC VOLTS meter. 750 LOWER SCALE — Applies 300 to 900 vdc to DC VOLTS meter.
750V ADJ switch	Adjusts output of 750 vdc power supply to voltages indicated. *Switch position* — *Action* 1 — 300±20 vdc. 2 — 650±25 vdc. 3 — 700±30 vdc. 4 — 750±30 vdc. 5 — 800±35 vdc. 6 — 850±35 vdc.
150V DC indicator (amber)	Indicates when power is applied to 150-volt supply.
FIL indicator (amber)	Indicates when power is applied to equipment.
750V DC indicator (amber)	Indicates when power is applied to 750-volt supply.
150V ADJ control	Adjusts output of 150-volt supply.

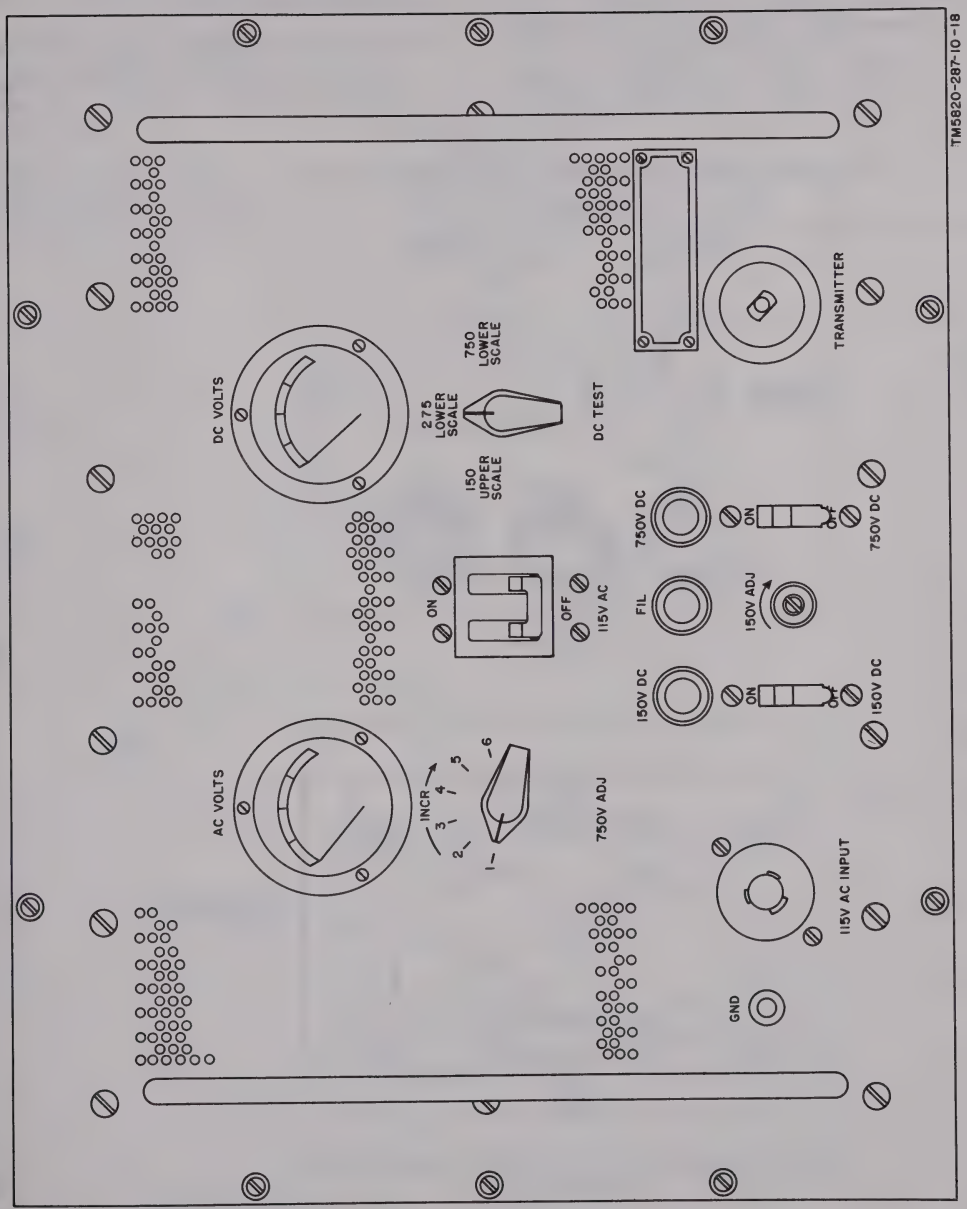
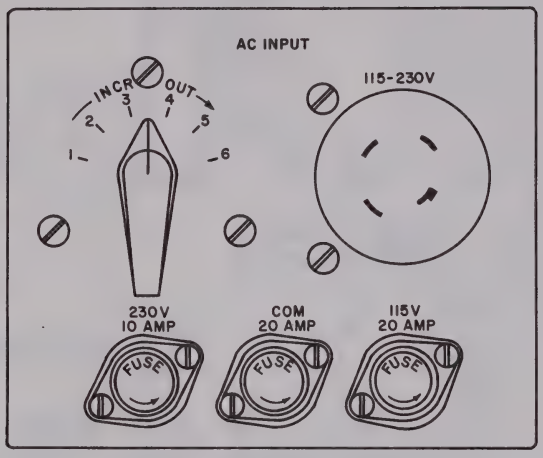


Figure 3-3. Power Supply PP-685(*)/TRC, front panel.

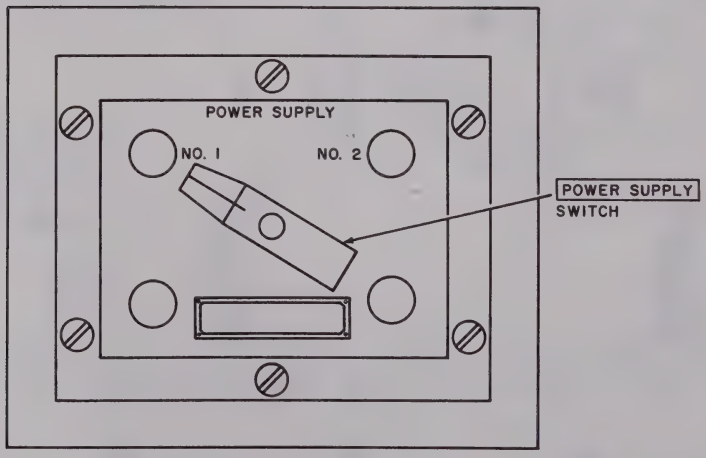
d. Transformer, Power, Fixed Auto Transformer TF-167/TRC and Switch Box SA-331/U.

(1) *Transformer, Power, Fixed Auto Transformer TF-167/TRC* (A, fig. 3-4). The INCR OUT switch adjusts the input voltage to 115 ±5.5 volts ac which is indicated on the AC VOLTS meter of the PP-685(*)/TRC.

(2) *Switch Box SA-331/U* (B, fig. 3-4). The POWER SUPPLY switch selects one of the two sources of ac power.



A. TF-167/TRC



B. SA-331/U

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Figure 3-4. Transformer, Power, Fixed Auto Transformer TF-167/TRC and Switch Box SA-331/U, front panel.

3-2. TRANSMITTER RADIO T-302(*)/TRC TUNING HEADS

a. Amplifier, Radio Frequency AM-1180/GRC (A-Band) (fig. 3-5).

Control or indicator	Function
PLATE TUNE control	Tunes plate circuit of power amplifier.
Plate tune dial	Indicates RF channel number and approximate position of PLATE TUNE control.
INPUT LOADING control	Adjusts effective grid-to-ground resistance of power amplifier.
TRACKING ADJ control	Adjusts frequency tracking of power amplifier.
SCREEN VOLTS ADJ control	Adjusts screen grid voltage of power amplifier.
OUTPUT COUPLING control	Adjusts output coupling of power amplifier for maximum output power.

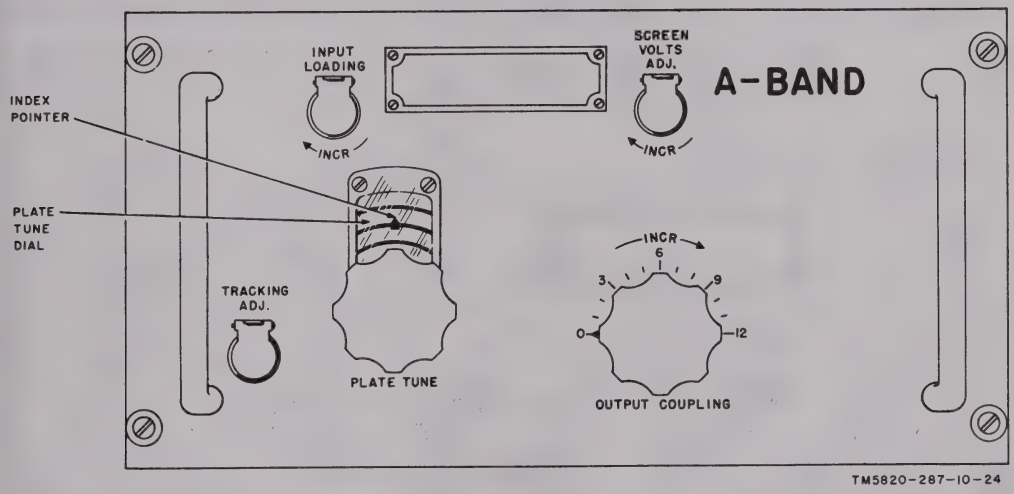

Figure 3-5. Amplifier, Radio Frequency AM-1180/GRC, front panel.

b. Amplifier, Radio Frequency AM-912(*)/TRC (B-Band) (fig. 3-6).

Control or indicator	Function
GRID control	Tunes grid circuit of tuner power amplifier.
GRID dial	Indicates RF channel number and approximate position of GRID control.
PLATE control	Tunes plate circuit of tuner power amplifier.
PLATE dial	Indicates RF channel number and approximate position of PLATE control.
AMPLIFIER OUTPUT COUPLING control	Adjusts output coupling of power amplifier.
SCREEN VOLTS ADJ control	Adjusts screen grid voltage of power amplifier.

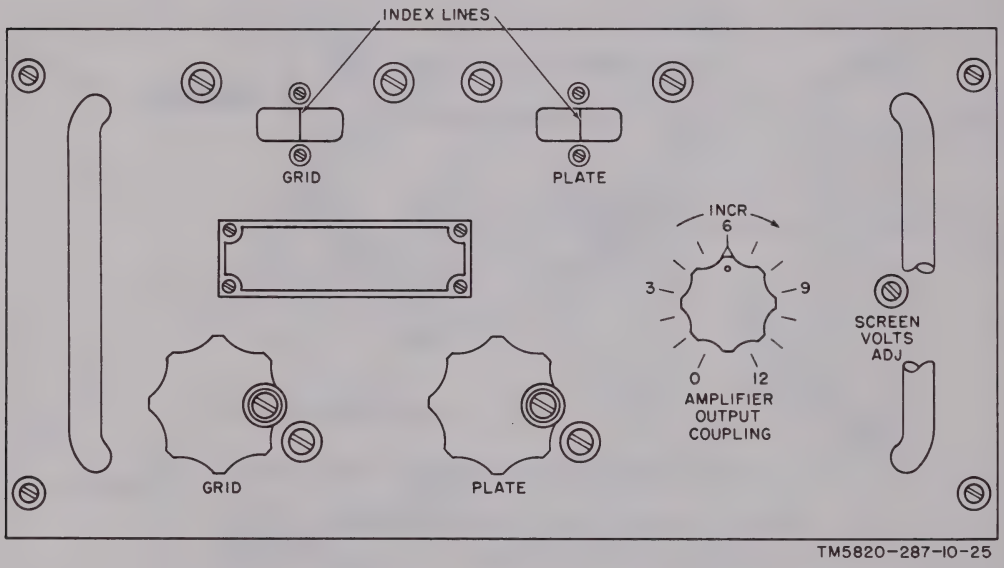

Figure 3-6. Amplifier, Radio Frequency AM-912(*)/TRC, front panel.

c. Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC (C-Band) (fig. 3-7).

Control or indicator	Function
MULTIPLIER GRID control	Tunes grid circuit of tuner frequency multiplier.
MULTIPLIER GRID dial	Indicates RF channel number and approximate position of multiplier grid control.
MULTIPLIER PLATE control	Tunes plate circuit of tuner frequency multiplier.
MULTIPLIER PLATE dial	Indicates RF channel number and approximate position of multiplier plate control.
MULTIPLIER OUTPUT COUPLING control	Adjusts coupling between tuner frequency multiplier and tuner power amplifier.
POWER AMPLIFIER GRID control	Tunes grid circuit of tuner power amplifier.
POWER AMPLIFIER GRID dial	Indicates RF channel number and approximate position of power amplifier grid control.
POWER AMPLIFIER PLATE control	Tunes plate circuit of tuner power amplifier.
POWER AMPLIFIER PLATE dial	Indicates RF channel number and approximate position of power amplifier plate control.
AMPLIFIER OUTPUT COUPLING control	Adjusts output coupling of tuner power amplifier.
SCREEN VOLTS ADJ control	Adjusts screen grid voltage of power amplifier.

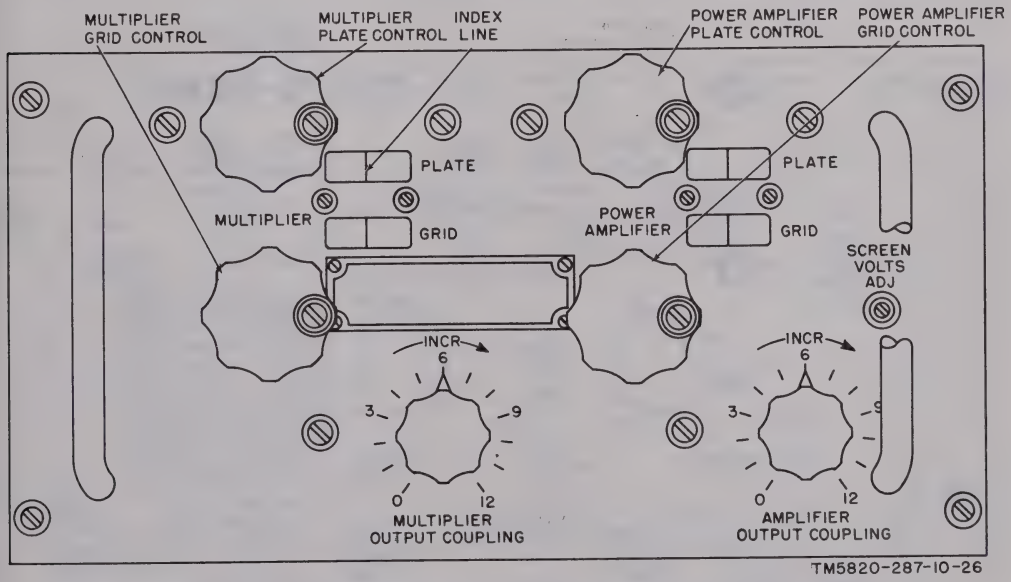

Figure 3-7. Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC, front panel.

d. Amplifier-Multiplier, Radio Frequency AM-1178/TRC (D-Band) (fig. 3-8).

Control or indicator	Function
MULTIPLIER control	Tunes grid circuit of tuner frequency multiplier.
GRID dial (left)	Indicates RF channel number and approximate position of MULTIPLIER GRID control.
MULTIPLIER PLATE control	Tunes plate circuit of tuner frequency multiplier.
PLATE dial (left)	Indicates RF channel number and approximate position of multiplier plate control.
MULTIPLIER OUTPUT COUPLING control.	Adjusts coupling between frequency multiplier and power amplifier.
POWER AMPLIFIER control	Tunes grid circuit of tuner power amplifier.
GRID dial (right)	Indicates RF channel number and approximate position of POWER AMPLIFIER GRID control.
POWER AMPLIFIER PLATE control	Tunes plate circuit of power amplifier.
PLATE dial (right)	Indicates RF channel number selected by power amplifier plate control.
AMPLIFIER OUTPUT COUPLING control.	Adjusts output coupling of tuner power amplifier.
SCREEN VOLTS ADJ control	Adjusts screen grid voltage of power amplifier.

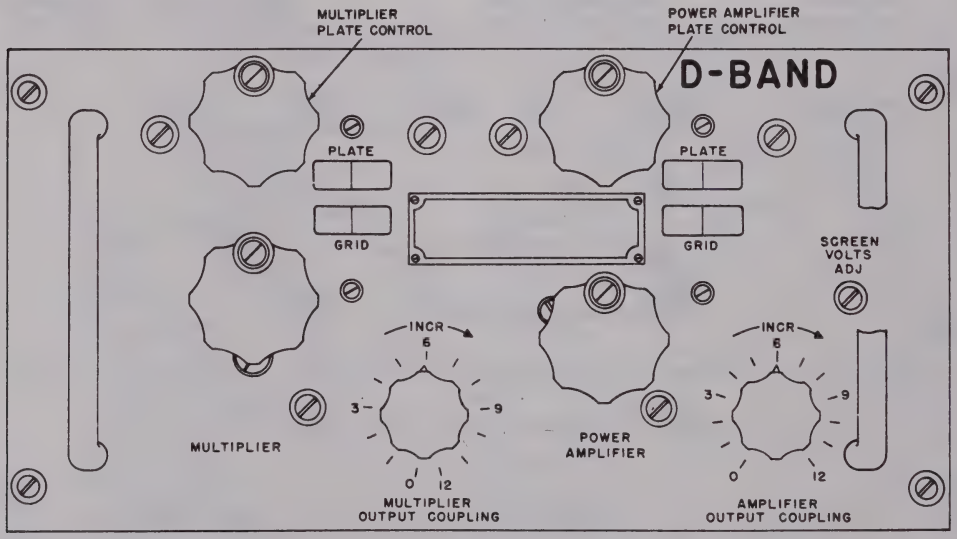

Figure 3-8. Amplifier-Multiplier, Radio Frequency AM-1178/GRC, front panel.

e. Amplifier-Converter AM-2537/TRA-25 (F-Band) (fig. 3-9).

Control or indicator	Function
REC OSC INJ control	Adjusts signal strength applied to receiver from oscillator-multiplier.
OSC TUNE control	Adjusts RF frequency in doubler cavity of oscillator-multiplier.
OSC OUTPUT control	Adjusts signal strength of RF frequency from oscillator-multiplier.
Mixer tuning control	Adjusts RF frequency of cavity in mixer circuit.
MIXER TUNE and PA TUNE dials	Indicates desired RF channel; orange indicates high channel numbers, green indicates low channel numbers.
350 V control	Adjusts voltage applied to circuits from PP-685(*)/TRC.
Power amplifier tuning control	Adjusts RF channel frequency of cavity in power amplifier.
MIXER COUPLING control	Adjusts RF frequency of cavity in mixer to match RF frequency of cavity in power amplifier.
TEST MULT CATH switch	Connects T-302(*)/TRC TEST meter to circuits indicated when TEST switch is in MULT CATH position.
	Switch position — *Circuit connected*
	1ST TRIP CATH — Cathode of 1st tripler.
	DOUB CATH — Cathode of doubler.
	MIXER CATH — Cathode of mixer.
	PA CATH — Cathode of power amplifier.
	REC XTAL CUR — Crystal mixer diode output of CV-932/TRA-25.

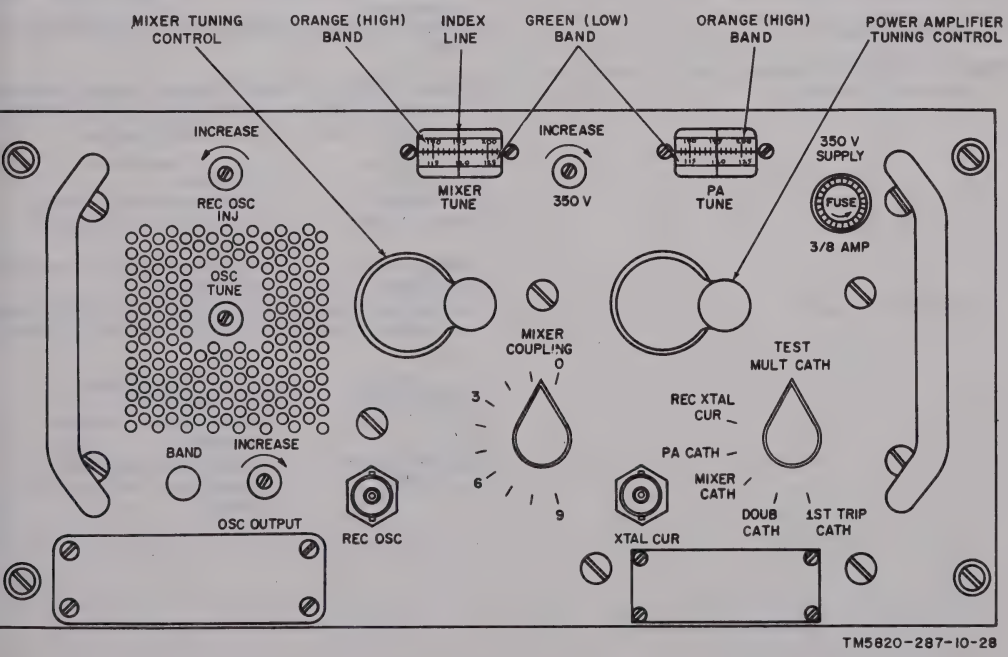

Figure 3-9. Amplifier-Converter AM-2537/TRA-25, front panel.

f. Amplifier-Converter AM–3204A/TRC–24 (J-Band) (fig. 3–10).

Control or indicator	Function
INJECTION MULTIPLIER TUNE dial	Three-section dial marked LO (blue), MED (red), and HI (green).
MIXER TUNE or POWER AMPL TUNE dial	Three-section colored dial, each section contains an A (1 through 200) and a B (1 through 250) scale. Colored sections are as follows: *Color* — *Frequency range* Blue — Low. Red — Medium. Green — High.
INJECTION MULTIPLIER TUNE control	Tunes injection multiplier cavity to injection frequency range indicated on INJECTION MULTIPLIER TUNE dial.
INJECTION MULTIPLIER COUPLING control	Adjusts output RF coupling from injection multiplier cavity to mixer circuit.
MIXER TUNE control	Tunes mixer cavity to frequency of RF channel indicated on MIXER TUNE dial.
MIXER COUPLING control	Adjusts output RF coupling from mixer cavity to power amplifier circuit.
POWER AMPL TUNE control	Tunes power amplifier cavity to frequency of RF channel indicated on POWER AMPL TUNE dial.
POWER AMPL COUPLING control	Adjusts output RF coupling from power amplifier cavity to antenna.
INCR 300V control	Adjusts B+ voltage applied to circuits from PP–685(*)/TRC.
TEST MULT CATH switch: OSC-MULT section	Connects circuits of O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 to TEST meter of T–302(*)/TRC with TEST switch in MULT CATH position: *Sw pos* — *Circuit connected* B+ VOLTS — B+ circuit. OSC CATH — Cathode circuit of oscillator. DBLR CATH — Cathode circuit of frequency doubler. AMPL CATH — Cathode circuit of power amplifier INJECTION DR — Output circuit.
AMPL-CONV section	Connects circuits of AM–3204A/TRC–24 to TEST meter of T–302(*)/TRC, with TEST switch in MULT CATH position: *Sw pos* — *Circuit connected* CATH BIAS — Bias supply circuit. MULT CATH — Cathode circuit of injection multiplier. MIXER CATH — Cathode circuit of mixer. PA CATH — Cathode circuit of power amplifier.

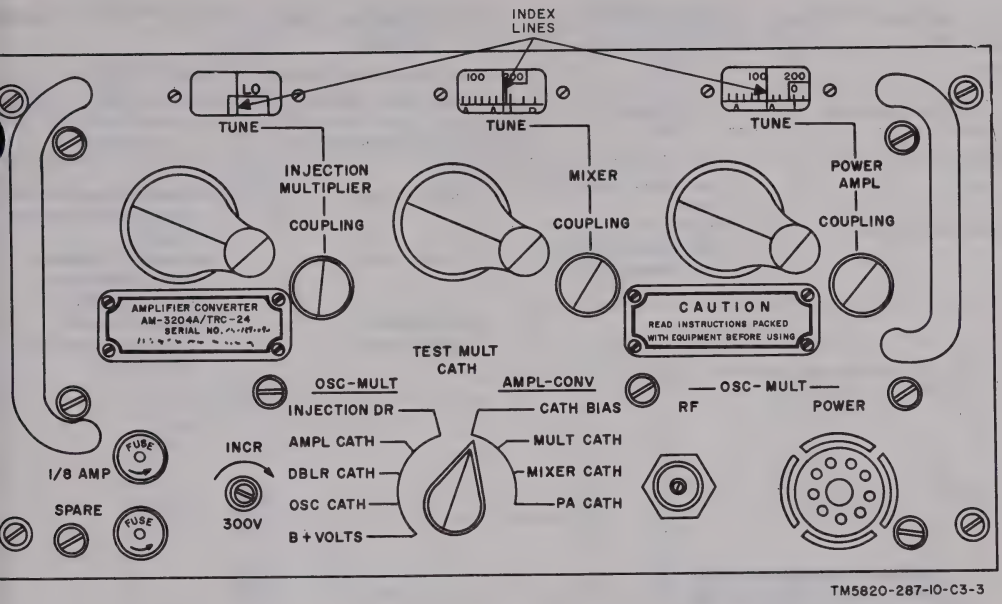

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Figure 3-10. Amplifier-Converter AM-3204A/TRC-24, front panel.

g. Oscillator-Multiplier O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 (J-Band) (fig. 3–11).

Control or indicator	Function
INJECTION DRIVE control.	Adjusts RF output power from power amplifier circuit.
Range indicator	Indicates low (LO) medium (MED), or high (HI) J-band range.

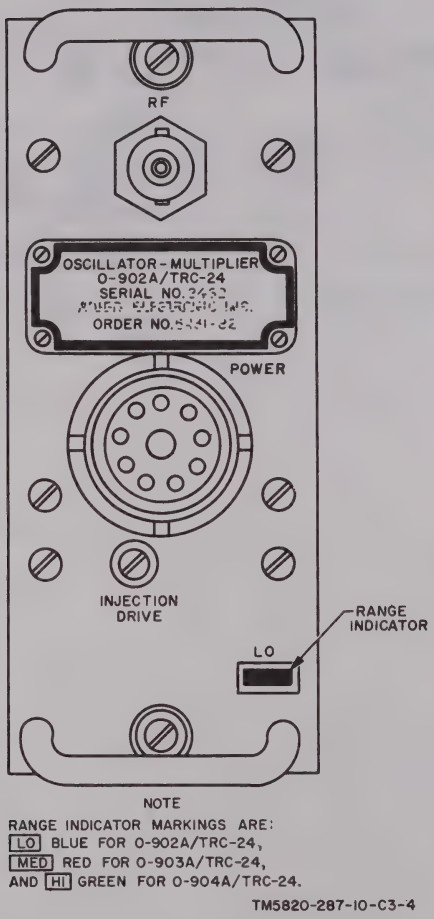


Figure 3–11. Oscillator-Multiplier O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24, front panel.

3–3. Receiver, Radio R–417 (*)/TRC Tuning Heads

a. Amplifier-Converter AM–1179/GRC (A-Band) and AM–913 TRC (B-Band) (fig. 3–12).

Control or indicator	Function
Tuning control	Adjusts frequency of oscillator and RF amplifier circuits.
RF AMP dial	Indicates RF channel number selected by tuning control.
AFC control	Adjusts afc circuit.
INDEX control	Adjusts index line of RF AMP dial.

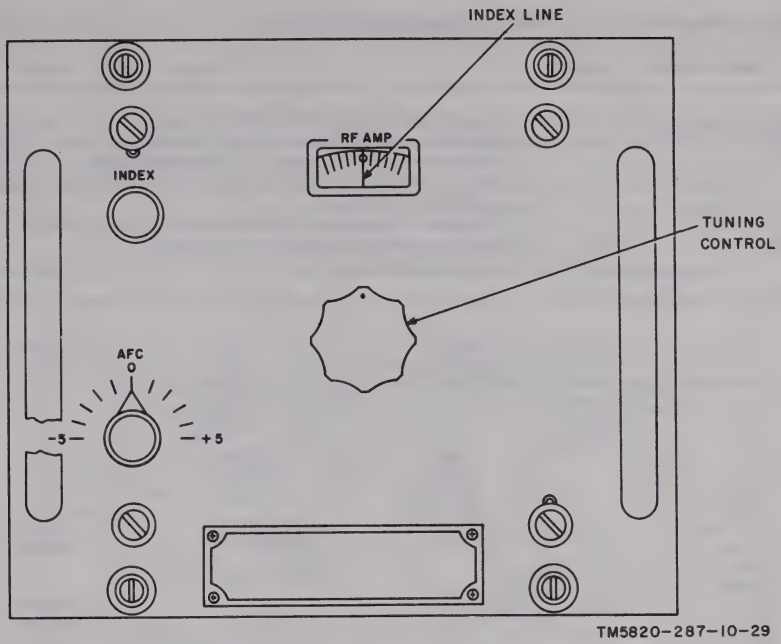


Figure 3-12. Amplifier-Converter AM-913/TRC or AM-1179/GRC, front panel.

b. Amplifier-Converter AM–914/TRC (C-Band) (fig. 3–13).

Control or indicator	Function
Tuning control	Adjusts frequency of RF amplifier circuits.
COARSE PUSH TO TURN control	Roughly adjusts frequency of oscillator circuit.
FINE control	Accurately adjusts frequency of oscillator circuit.
OSC dial	Indicates RF channel number selected by COARSE PUSH TO TURN and FINE controls.
RF AMP dial	Indicates RF channel number selected by tuning control.
INDEX control	Adjusts position of index line on OSC dial.
AFC control	Adjusts afc circuit.

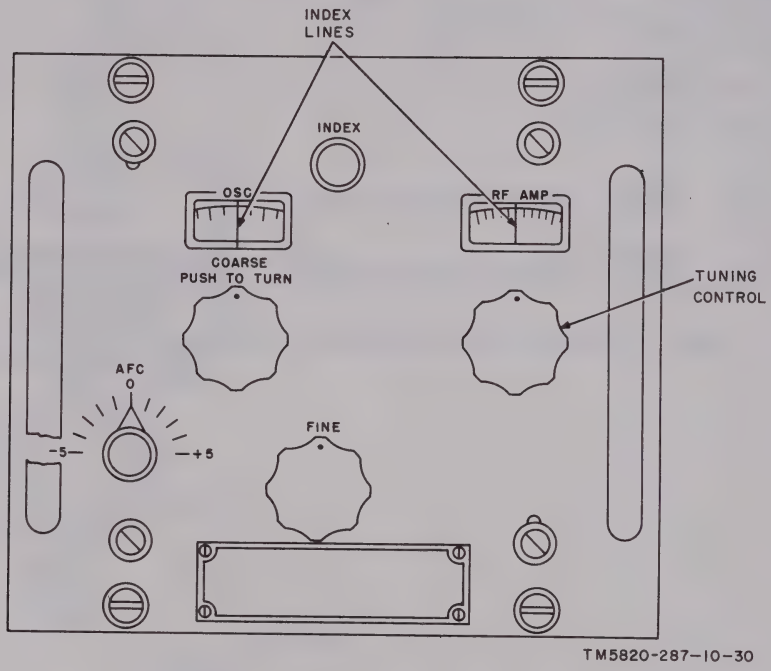


Figure 3–13. Amplifier-Converter AM–914/TRC, front panel.

c. Amplifier-Converter AM-1177/GRC (D-Band) (fig. 3-14).

Control or indicator	Function
RF amplifier tuning control	Roughly adjusts frequency of RF amplifier circuit.
Oscillator tuning control	Adjusts frequency of oscillator circuit.
AFC control	Adjusts afc circuit.
RF AMP dial	Indicates RF channel number selected by RF amplifier tuning control.
OSC dial	Indicates RF channel number of oscillator selected by oscillator tuning control.
INDEX control	Adjusts position of index line on ISC dial.
FINE TUNE control	Accurately adjusts frequency of RF amplifier circuit.

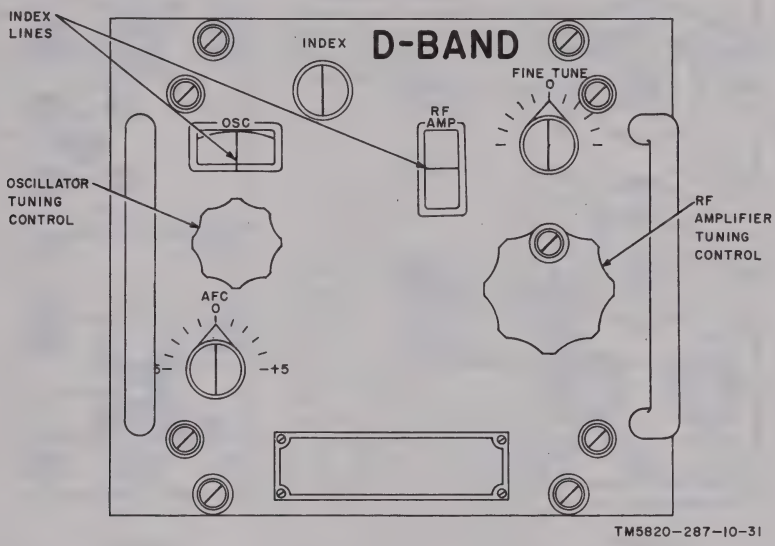


Figure 3-14. Amplifier-Converter AM-1177/GRC, front panel.

d. Mixer Stage, Frequency CV-932/TRA-25 (F-Band) (fig. 3-15).

Control or indicator	Function
Mixer tuning dial	Adjusts mixer preselector circuit to desired RF channel number.
Antenna tuning dial	Adjusts antenna preselector circuit to desired RF channel number.
LO FIL TUN control	Adjusts bandpass filter to frequency of oscillator-multiplier signal of AM-2537/TRA-25.

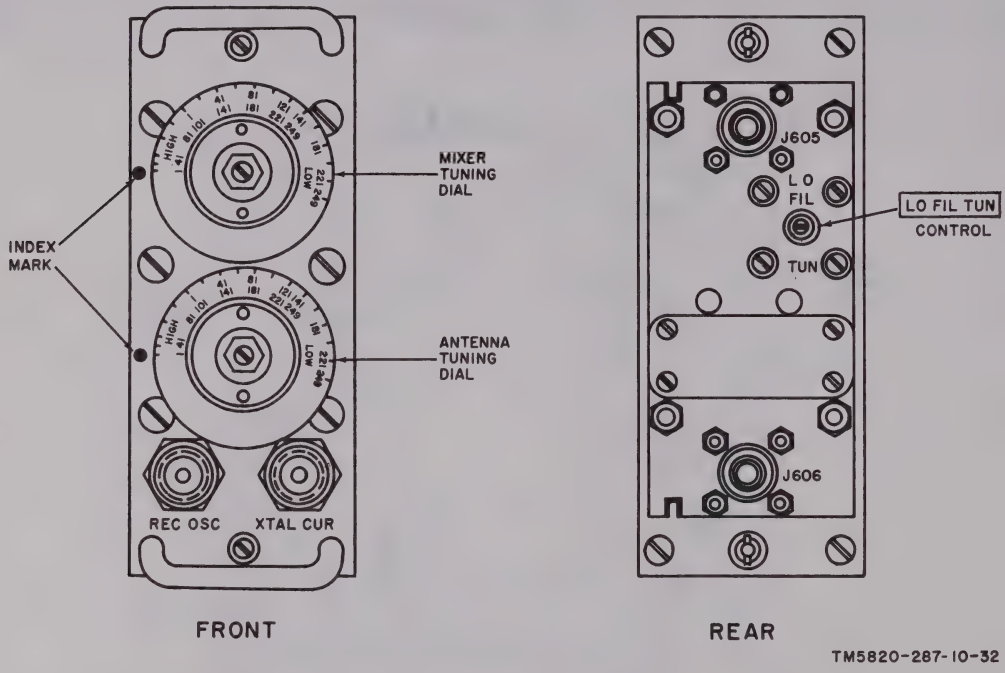


Figure 3-15. Mixer Stage, Frequency CV-932/TRA-25, front and rear panels.

e. Amplifier-Converter AM-3203A/TRC-24 (J-Band) (fig. 3-16).

Control or indicator	Function
PRESELECTOR tuning control	Tunes preselector to frequency of RF channel number indicated on PRESELECTOR dial.
PRESELECTOR or OSCILLATOR dial	Three-section colored dial; each section contains an A (1 through 200) and a B (1 through 250) scale. Colored sections are as follows:
	Color — *Frequency range* Blue — Low. Red — Medium. Green — High.
OSCILLATOR tuning control	Tunes local oscillator to frequency of RF channel number indicated on OSCILLATOR dial.
INDEX control	Adjusts position of index line on OSCILLATOR dial.
AFC control	Adjusts automatic frequency control circuit.
CALIBRATE pushbutton switch	When depressed, disconnects afc circuit and connects calibrator oscillator.

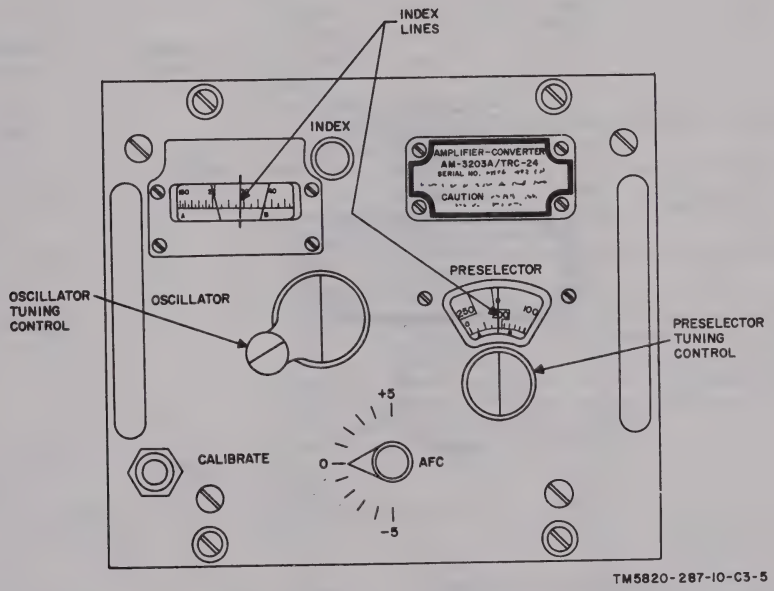


Figure 3-16. Amplifier-Converter AM-3203A/TRC-24, front panel.

f. Filter, Band Pass F-691/TRC-24 (J-Band) (fig. 3-17).

Control or indicator	Function
Tuning control	Tunes circuit to proper frequency of RF channel number indicated on tuning dial.
Tuning dial	Three-section colored dial; each section of dial has an A (1 through 200) scale and a B (1 through 250) scale. Scales are as follows:

Color	*Frequency range*
Blue	Low.
Red	Medium.
Green	High.

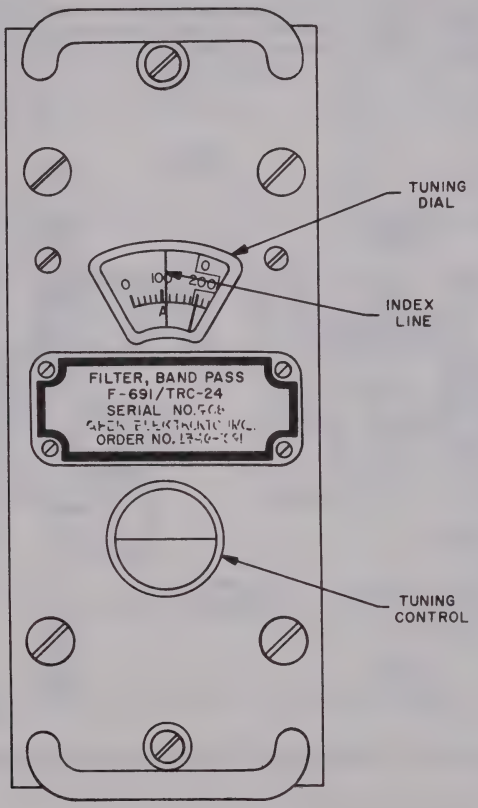


Figure 3-17. Filter, Band Pass F-691/TRC-24, front panel.

Section II. OPERATION UNDER USUAL CONDITIONS

Warning: Rectifier CR1 in Power Supply PP-685(*)/TRC is a selenium rectifier. Selenium rectifiers release poisonous fumes when they burn out or arc over. Selenium and its compounds are toxic. Overheated selenium rectifiers should not be handled with bare hands.

3-4. Preoperational Procedures

a. Transmitter, Radio T-302(*)/TRC, Receiver, Radio R-417(*)/TRC, and Power Equipment.

(1) *Transmitter, Radio T-302(*)/TRC* (fig. 3-1).

(*a*) *Settings.* Set the controls of the T-302(*)/TRC in the positions indicated in the chart below.

Control	Setting
INPUT ADJ control	OFF.
MEASURE switch	RF CHAN TUNE.
AFC switch	OFF.
XTAL SEL switch	DECADE CHANS.
PULSED OSC switch	ODD CHANNELS for odd RF channel number and EVEN CHANNELS for even RF channel numbers.
TUNE control	Adjust until desired RF channel number appears under index pointer of odd channel dial or even channel dial.
INDEX control	Adjust until index pointer is centered in RF CHANNEL dial.
LOCK control	Turn completely counterclockwise.
RF CHANNEL TUNE control	Adjust until desired RF channel number is centered under index pointer of RF CHANNEL dial.
AFC control	0.
DRIVER TUNE control	Adjust until desired RF channel number is indicated under index pointer of driver channel dial. For J-band A-channels operation, adjust until desired RF channel number is indicated on black scale under index pointer of driver channel dial. For J-band B-channels operation, adjust until desired RF channel number is indicated on white scale under index pointer of driver channel dial.
DRIVER OUTPUT COUPLING control	3 on DRIVER OUTPUT COUPLING dial.
TEST switch	DRIVER CATH.
ALARM switch	OFF.
THRESHOLD ADJ control	Fully counterclockwise.

(*b*) *Connections.*

1. Disconnect the CG-1030/U (A-, B-, C-, and D-bands), CG-1886/U (F-band, AN/TRA-25), CG-1030A/U (F-band, AN/TRA-25A), or CG-2636/U (J-band) from the ANTENNA jack of the T-302(*)/TRC.
2. Connect the CG-718A/U between the ANTENNA jack and the input jack of the ME-82/U (fig. 1-2).

Note. If a bandpass filter is installed in the T-302(*)/TRC, remove it and install the dummy filter to protect the final amplifier tubes in the tuning head during the tune up.

***Caution:* When the tuning controls are turned completely counterclockwise, do not force them beyond their stops, because their calibration will become incorrect.**

(2) *Receiver, Radio R-417(*)/TRC* (fig. 3-2).

Note. If a bandpass filter is installed in the receiver, remove it and install the dummy filter to prevent the loss of marginal signals during the tuneup.

(*a*) *Settings.*

***Caution:* When the tuning controls are turned completely counterclockwise, do not force them beyond their stops because their calibration will become incorrect.**

Control	Setting
POWER circuit breaker	OFF.
MEASURE switch	B+.
SQUELCH control	Fully clockwise.
ALARM switch	NOR.
OUTPUT ADJ control	Determine the tuning head in use and operate to applicable setting indicated below. 25 (A-band). 19 (B-band). 15 (C-band). 12 (D-band). 19 (F-band). 25 (J-band) A scale. 19 (J-band) B scale.

(*b*) *Connections.*

1. Remove the CG-1030/U (CG-1886/U, AN/TRA-25; CG-1030A/U, AN/TRA-25A) from the ANTENNA jack.

2. Connect the CG-1031/U between the ANTENNA jack and the CAL OUT jack.

(3) *Power Equipment.*

(*a*) *Power Supply PP-685(*)/TRC* (fig. 3-3).

Control	Setting
115V AC circuit breaker	OFF.
750V ADJ control	2.
750V DC circuit breaker	OFF.
150V DC circuit breaker	OFF.

(*b*) *Transformer, Power, Fixed Auto Transformer TF-167/TRC and Switch Box SA-331/U.*

1. Set the INCR OUT switch of TF-167/TRC (A, fig. 3-4) to position 1.

2. Set the POWER SUPPLY switch of SA-331/U (B, fig. 3-4) to position NO. 1 or NO. 2 corresponding to the primary source of power.

(*c*) *Generator Set, Gasoline Engine PU-286/G.* Refer to TM 11-6115-204-10, -20, -35.

b. Tuning Heads, T-302(*)/TRC.

(1) *Amplifier, Radio Frequency AM-1180/GRC (A-band)* (fig. 3-5).

Control	Setting
PLATE TUNE control	Adjust until desired RF channel number appears under index pointer of plate tune dial.
OUTPUT COUPLING control.	6.

(2) *Amplifier, Radio Frequency AM-912/TRC (B-band)* (fig. 3-6).

Control	Setting
GRID control	Adjust until desired RF channel number appears under index line of GRID dial.
PLATE control	Adjust until desired RF channel number appears under index line of PLATE dial.
AMPLIFIER OUTPUT COUPLING control.	6.

(3) *Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC (C-band)* (fig. 3-7).

Control	Setting
MULTIPLIER GRID control	Adjust until desired RF channel number appears under index line of MULTIPLIER GRID dial.
MULTIPLIER PLATE control	Adjust until desired RF channel number appears under index line of MULTIPLIER PLATE dial.
POWER AMPLIFIER GRID control	Adjust until desired RF channel number appears under index line of POWER AMPLIFIER GRID dial.
POWER AMPLIFIER PLATE control	Adjust until desired RF channel number appears under index line of POWER AMPLIFIER PLATE dial.
MULTIPLIER OUTPUT COUPLING control.	6.
AMPLIFIER OUTPUT COUPLING control.	6.

(4) *Amplifier-Multiplier, Radio Frequency AM-1178/TRC (D-Band)* (fig. 3-8).

Control	Setting
MULTIPLIER control	Adjust until desired RF channel number appears under index line of GRID dial (left).
MULTIPLIER PLATE control	Adjust until desired RF channel number appears under index line of PLATE dial (left).
POWER AMPLIFIER control.	Adjust until desired RF channel number appears under index line of GRID dial (right).
WER AMPLIFIER PLATE control	Adjust until desired RF channel number appears under index line of PLATE dial (right).
MULTIPLIER OUTPUT COUPLING control.	6.
AMPLIFIER OUTPUT COUPLING control.	6.

(5) *Amplifier-Converter AM-2537/TRA-25 (F-Band)* (fig. 3-9).

Control	Setting
IXER tuning control	Adjust until desired RF channel number appears under index line of MIXER TUNE dial.
AMPLIFIER tuning control.	Adjust until desired RF channel number appears under index line of PA TUNE dial.
MIXER COUPLING control.	6.
TEST MULT CATH switch	MIXER CATH.

(6) *Amplifier-Converter AM-3204A/TRC-24 (J-Band)* (fig. 3-10).

Control	Setting
INJECTION MULTIPLIER TUNE control.	Adjust until desired range marking appears under index line of INJECTION MULTIPLIER TUNE dial.
INJECTION MULTIPLIER COUPLING control.	Midposition.
MIXER TUNE control	Adjust until desired RF channel number appears under index line of MIXER TUNE dial.
MIXER COUPLING control.	Midposition.
POWER AMPL TUNE control.	Adjust until desired RF channel number appears under index line of POWER AMPL TUNE dial.
POWER AMPL COUPLING control.	Midposition.

c. Tuning Heads, R-417(*)/TRC.

(1) *Amplifier-Converter AM-1179/GRC (A-Band) and AM-913/GRC (B-Band)* (fig. 3-12).

Control	Setting
INDEX control	Adjust until index line is centered on RF AMP dial.
Tuning control	Adjust until red calibration mark nearest desired RF channel number appears under index line or RF AMP dial.
AFC control	0.

(2) *Amplifier-Converter AM-914/TRC (C-band)* (fig. 3-13).

Control	Setting
INDEX control	Adjust until index line is centered on OSC dial.
COARSE PUSH TO TURN control.	Adjust until red calibration mark nearest desired RF channel number appears under index line of OSC dial.
Tuning control	Adjust until RF channel number appearing under index line of OSC dial appears under index line of RF AMP dial.
AFC control	0.
FINE control	0.

(3) *Amplifier-Converter AM-1177/GRC (D-band)* (fig. 3-14).

Control	Setting
INDEX control	Adjust until index line is centered on OSC dial.
OSCILLATOR tuning control	Adjust until red calibration mark nearest desired RF channel number is under index line of OSC dial.
RF AMPLIFIER tuning control	Adjust until RF channel number indicated under index line of OSC dial is under index line of RF AMP dial.
AFC control	0.

(4) *Mixer Stage, Frequency CV-932/TRA-25 (F-band)* (fig. 3-15).

Control	Setting
MIXER tuning dial	Adjust until desired RF channel number is aligned with index mark.
ANTENNA tuning dial	Adjust until desired RF channel number is aligned with index mark.

(5) *Amplifier-Converter AM-3203A/TRC-24 (J-band)* (fig. 3-16).

Control	Setting
INDEX control	Adjust until index line is centered on OSCILLATOR dial.
AFC control	0.
PRESELECTOR tuning control.	Adjust until red calibration mark nearest desired RF channel number appears under index line of PRESELECTOR dial.
OSCILLATOR tuning control.	Adjust until red calibration mark nearest desired RF channel number appears under index line of OSCILLATOR dial.

(6) *Filter, Band Pass F-691/TRC-24 (J-band)* (fig. 3-17). Adjust the tuning control until desired RF channel number appears under index line of tuning dial.

3-5. Tuning Procedures, T-302(*)TRC.

***Caution:* Do not tune the transmitter without first connecting Wattmeter ME-82/U to the ANTENNA jack, and installing the dummy filter.**

a. General. Each T-302(*)/TRC tuning head (A-, B-, C-, D-, F- or J-band) used in the T-302(*)/TRC requires a slightly different tuning procedure. Tuning procedures that apply to all the transmitter tuning heads are given in *b* through *j* below. Special tuning procedures that apply to the A-, B-, C-, D-, F- and J-bands respectively are given in *k* through *p* below. Output power and alarm adjustments that apply to all the T-302(*)/TRC tuning heads are given in *q* below.

b. Adjusting T-302(*)/TRC Afc Discriminator Circuit.

(1) Set the 115V AC switch on the PP-685(*)/TRC (fig. 3-3) to ON.

(2) Adjust the TF-167/TRC INCR OUT switch (fig. 3-4) so that the PP-685(*)/TRC AC VOLTS meter indicates 115 volts ±5.5.

(3) Set the PP-685(*)/TRC 150V DC switch to ON.

(4) Allow 10 minutes for the T-302(*)/TRC to warm up before proceeding.

(5) Readjust the TF-167/TRC INCR OUT switch as required to indicate 115 volts ±5.5 on the PP-685(*)/TRC AC VOLTS meter.

(6) Set the PP-685(*)/TRC DC TEST switch to 150 UPPER SCALE.

(7) Adjust the PP-685(*)/TRC 150V ADJ control for a reading of 150 volts on the DC VOLTS meter.

(8) Hold T-302(*)/TRC XTAL SEL switch (fig. 3-1) in the DISCR CENTER position for the checks below.

(9) Set the PULSED OSC switch to ODD CHANNELS.

(10) Check to see that the FREQ DRIFT meter pointer moves to the **left** for a clockwise rotation of the DISCR CENTER control, and to the **right** for counterclockwise rotation.

(11) Set the PULSED OSC switch to EVEN CHANNELS and check to see that the pointer operation is opposite to that given in (10) above.
(12) Set the PULSED OSC switch to the desired channel.
(13) Adjust the DISCR CENTER control for a zero reading on the FREQ DRIFT meter.
(14) Check the MEASURE meter for a reading of at least 10 microamperes (ua).
(15) Release the XTAL SEL switch.

c. Calibration, T-302(*)/TRC.

(1) Set the T-302(*)/TRC XTAL SEL switch to DECADE CHANS.
(2) Set the T-302(*)/TRC MEASURE switch to RF CHAN TUNE.

Note. Every 10th rf channel, starting with RF channel 1, is known as an *odd decade channel;* every 10th RF channel, starting with RF channel 10, is known as an *even decade channel.* Thus, channel 120 is an even decade channel, and channel 121 is an odd decade channel.

(3) If the desired channel is an even decade channel, set the RF CHANNEL TUNE control to the nearest even decade channel (note in (2) above and (8) below). If the desired channel is an odd decade channel, set the RF CHANNEL TUNE control to the nearest odd decade channel.
(4) Slowly rock the RF CHANNEL TUNE control left and right of the decade channel indication for a maximum indication on the T-302(*)/TRC MEASURE meter and a zero indication on the FREQ DRIFT meter.

***Caution:* When tuning near the ends of the tuning range, do not turn the RF CHANNEL TUNE control past its stops. Incorrect calibration of the RF CHANNEL dial may result.**

(5) Turn the INDEX control until the index line of the RF CHANNEL dial is directly above the desired decade channel.
(6) Set the XTAL SEL switch to UNIT CHANS.
(7) To select a desired RF channel, rotate the RF CHANNEL TUNE control from the position of the desired decade channel to the desired RF channel. Simultaneous maximum readings on the MEASURE meter and zero readings on the FREQ DRIFT meter will occur for each alternate RF channel. *For example,* if decade channel 120 has been tuned and the RF CHANNEL control is rotated clockwise, simultaneous MEASURE meter maximums and FREQ DRIFT meter zeros will occur at RF channels 122, 124, 126, and 128. If decade channel 121 has been tuned, clockwise rotation would result in simultaneous maximums and nulls will occur at RF channels 123, 125, 127, and 129. Counterclockwise rotation of the control permits tuning RF channels below the desired decade channel. Thus, if RF channel 125 is desired, it may be tuned by tuning *up* from 121 or *down* from 131.
(8) Rotate the INDEX control so that the RF CHANNEL dial index is directly above the desired channel.
(9) Rotate the LOCK control fully clockwise.
(10) Adjust the TUNE control for a peak indication on the MEASURE meter.
(11) Set the T-302(*)/TRC AFC switch to ON.

d. Afc Operation Check, T-302(*)/TRC.

(1) Hold the T-302(*)/TRC AFC control to the +4 position and note that the FREQ DRIFT meter pointer is in the positive part of the scale.
(2) Release the AFC control and note that the pointer returns to the 0 position.
(3) Hold the AFC control to the −4 position and note that the FREQ DRIFT meter pointer is in the negative part of the scale.
(4) Release the AFC control and note that the pointer returns to the 0 position.

e. Adjustment of 1-Kc Oscillator.

(1) Set T-302(*)/TRC MEASURE switch to 1KC ADJ.
(2) Adjust the 1KC ADJ screwdriver control for a 0-db reading on the MEASURE meter.

f. MEASURE Meter Circuit Adjustment, T-302(*)/TRC.

(1) Set the T-302(*)/TRC MEASURE switch to MTR CAL.
(2) Adjust the MTR CAL screwdriver control for a 0-db reading on the MEASURE meter.

g. Afc Limiter Adjustment, T–302(*)/TRC.

(1) Set the T–302(*)/TRC MEASURE switch to DISCR RF DRIVE.

(2) Adjust the DISCR RF DRIVE screwdriver control for a maximum reading on the MEASURE meter.

h. Base-Band Amplifier Input Adjustment, T–302(*)/TRC.

(1) Set the T–302(*)/TRC MEASURE switch to MOD ADJ.

(2) Adjust the MOD ADJ control for a 0-db reading on the MEASURE meter.

(3) Hold the T–302(*)/TRC MTR SENS switch to INCR.

(4) Adjust the T–302(*)/TRC MOD TRIM screwdriver control for a maximum reading on the MEASURE meter.

Note. If the reading on the MEASURE meter is beyond full-scale deflection, adjust the MOD ADJ control until the MEASURE meter indication is midscale, and then adjust the MOD TRIM control for a maximum reading on the MEASURE meter.

(5) Release the MTR SENS switch.

(6) Adjust the MOD ADJ control for the correct indication on the MEASURE meter as determined from the chart below.

T–302(*)/TRC tuning head	Indication (db)
AM–1180/GRC (A-band)	+2
AM–912(*)/TRC (B-band)	+2
AM–915(*)/TRC (C-band)	0
AM–1178/GRC (D-band)	0
AM–2537/TRA–25 (F-band)	+2
AM–3204A/TRC–24 (J-band)	+2

i. Driver Stage Adjustment, T–302(*)/TRC.

(1) Set the 750V ADJ switch on the PP–685(*)/TRC to position 2.

(2) Set the T–302(*)/TRC TEST switch to DRIVER CATH.

(3) Set the PP–685(*)/TRC 750V DC switch to ON.

***Caution:* If the T–302(*)/TRC has been operating for more than 10 minutes and the 750V DC switch is set to OFF, allow a delay of 1 minute before returning the switch to ON to prevent the PP–685(*)/TRC from damage.**

(4) Adjust the TF–167/TRC INCR OUT switch for a reading of 115 ±2 volts on the PP–685(*)/TRC AC VOLTS meter.

(5) Slowly adjust the T–302(*)/TRC DRIVER TUNE control for a dip (minimum) on the TEST meter.

j. General Tuner Adjustments.

(1) Set the PP–685(*)/TRC DC TEST switch to 750 LOWER SCALE.

(2) Set the PP–685(*)/TRC 750V ADJ switch for a reading of 850 ±35 on the DC VOLTS meter. (See (5) below.)

(3) Set the DC TEST switch to 275 LOWER SCALE.

(4) Adjust the SCREEN VOLTS ADJ control (INCREASE 350V control on the AM–2537/TRA–25 (F-band)) or the INCR 300V control on the AM–3204A/TRC–24 (J-band) of the tuning head as indicated in the chart below.

T–302(*)/TRC tuning head	Figure No.	Adjustment
AM–1180/GRC (A-band).	3–5	Adjust to provide a minimum indication on DC VOLTS meter.
AM–912(*)/TRC (B-band).	3–6	Adjust to provide a minimum indication on DC VOLTS meter.
AM–915(*)/TRC (C-band).	3–7	Adjust to provide a minimum indication on DC VOLTS meter.
AM–1178/GRC (D-band).	3–8	Adjust to provide a minimum indication on DC VOLTS meter.
AM–2537/TRA–25 (F-band).	3–9	Adjust to provide a +350 volts indication on DC VOLTS meter.
AM–3204A/TRC–24	3–10	Adjust to provide a 300-volt indication on DC VOLTS meter.

(5) It may be necessary to adjust the PP–685(*)/TRC overcurrent trip adjustment, potentiometer R1. To adjust R1, loosen the Dzus fasteners on the PP–685(*)/TRC front panel and slide the chassis out of the case approximately 1½ inches (if removed too far, the interlock circuit will actuate). Turn R1 to its extreme clockwise position. Set the 750V ADJ switch to the normal operating position, with the DC TEST switch (fig. 3–3) in

the 750 LOWER SCALE position. Adjust R1 slowly in a counterclockwise direction to the first position at which the indication on the DC VOLTS meter drops to zero. Turn the 115V AC switch to OFF and turn R1 clockwise one-half turn. Set the 115V AC switch to ON and check the DC VOLTS meter for a normal indication. Push the chassis into the case and fasten the Dzus fasteners.

(6) Set the PP-685(*)/TRC 750V ADJ switch to position 1.

(7) Accomplish the tuning procedure for the applicable T-302(*)/TRC tuning head.

k. Amplifier, Radio Frequency AM-1180/GRC (A-Band) (fig. 3-5).

(1) Set the T-302(*)/TRC TEST switch to PWR AMPL GRID.

(2) Adjust the DRIVER TUNE and DRIVER OUTPUT COUPLING controls for a maximum reading on the TEST meter.

Note. If the TEST meter indicates full scale, adjust the DRIVER OUTPUT COUPLING control for a midscale reading.

(3) Adjust the AM-1180/GRC PLATE TUNE and OUTPUT COUPLING controls for a maximum reading on Wattmeter ME-82/U.

(4) Set the PP-685(*)/TRC DC TEST switch to 750 LOWER SCALE.

(5) Set the 750V ADJ switch for a reading of 800 ±35 on the DC VOLTS meter. Readjust the TF-167/TRC INCR OUT switch for 115 volts as necessary. (See *j*(4) above.)

(6) Set the T-302(*)/TRC TEST switch to PWR AMPL CATH.

(7) Adjust the AM-1180/GRC SCREEN VOLTS ADJ control for a reading of 21 microamperes on the T-302(*)/TRC TEST meter.

(8) Set the T-302(*)/TRC TEST switch to PWR AMPL GRID.

(9) Adjust the T-302(*)/TRC DRIVER TUNE control for a maximum reading on the TEST meter.

(10) Adjust the DRIVER OUTPUT COUPLING control for a TEST meter reading of more than 25 microamperes or until the control is fully clockwise.

(11) Repeat the procedures given in (3) above.

(12) Allow the T-302(*)/TRC a 30-minute warmup period and retune (*b* through *j* and (1) through (11) above).

(13) The ME-82/U will indicate 60 to 100 watts. (The dummy filter may cause slightly lower readings.) If additional power is needed, proceed as follows:

(*a*) Set the T-302(*)/TRC TEST switch to PWR AMPL CATH.

(*b*) Adjust the AM-1180/GRC SCREEN VOLTS ADJ control for a reading of not more than 25 microamperes on the T-302(*)/TRC TEST meter.

***Caution:* Do not allow the indication on the TEST meter to exceed 25 microamperes; the power amplifier tubes of the T-302(*)/TRC may become damaged.**

(*c*) Adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING and the DRIVER TUNE controls for a maximum indication on the ME-82/U.

Note. To decrease the ME-82/U indication, either adjust the SCREEN VOLTS ADJ control on the AM-1180/GRC or decrease the setting of the PP-685(*)/TRC 750V ADJ control.

(14) Proceed to *q* below.

l. Amplifier, Radio Frequency AM-912(*)/TRC (B-Band) (fig. 3-6).

(1) Adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING control for a reading of 5 on the DRIVER OUTPUT COUPLING dial.

(2) Set the T-302(*)/TRC TEST switch to DRIVER CATH.

(3) Adjust the T-302(*)/TRC DRIVER TUNE control until the TEST meter shows a slight dip.

(4) Set the TEST switch to PWR AMPL GRID.

(5) Adjust the AM-912(*)/TRC GRID control for a maximum reading on the T-302(*)/TRC TEST meter.

(6) Repeat the procedures given in (1) through (5) above for a maximum reading (not more than 20 microamperes) on the T-302(*)/TRC TEST meter.

(7) If the T-302(*)/TRC TEST meter reading decreases, adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING control in the opposite direction by small amounts. Repeat the procedures given in (2) through (5) above after each adjustment for a maximum reading (not more than 20 microamperes) on the T-302(*)/TRC TEST meter.

(8) Set the PP-685(*)/TRC 750V ADJ switch to position 2.

(9) Adjust the AM-912(*)/TRC PLATE control for a maximum indication on ME-82/U.

(10) Adjust the AM-912(*)/TRC AMPLIFIER OUTPUT COUPLING for a maximum indication on the ME-82/U.

(11) Alternately repeat the procedures given in (9) and (10) above until no further increases are noted. (The increase obtained by adjusting the AMPLIFIER OUTPUT COUPLING control will be very slight.)

(12) Set the PP-685(*)/TRC 750V ADJ switch for a reading of 850±35 on the DC VOLTS meter. (See *j*(4) above.)

(13) Allow the T-302(*)/TRC a 30-minute warmup period and retune (*b* through *j*, and (1) through (12) above).

(14) The ME-82/U will normally indicate from 70 to 115 watts (minimum is 50 watts). (The indication may be less with the dummy filter.) If additional power is required, perform the procedures given in (*a*), (*b*), and (*c*) below.

(*a*) Set the T-302(*)/TRC TEST switch to PWR AMPL CATH.

(*b*) Adjust the SCREEN VOLTS ADJ control for a maximum reading of 25 microamperes.

Caution: **Do not allow the reading on the TEST meter to exceed 25 microamperes; damage to the power amplifier tubes of the T-302(*)/TRC may result.**

(*c*) Adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING and DRIVER TUNE controls for a maximum reading on the ME-82/U.

Note. To decrease the ME-82/U reading, adjust the AM-912(*)/TRC SCREEN VOLTS ADJ control or rotate the PP-685(*)/TRC 750V ADJ switch counterclockwise to a lower position.

(15) Proceed to *q* below.

m. Amplifier-Multiplier, Radio Frequency AM-915(*)/TRC (C-Band) (fig. 3-7).

(1) Set the T-302(*)/TRC TEST switch to DRIVER CATH.

(2) Adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING control for a reading of 5 on the DRIVER OUTPUT COUPLING dial.

(3) Slowly adjust the T-302(*)/TRC DRIVER TUNE control for a very slight dip on the TEST meter, and a maximum indication on the ME-82/U.

(4) Set the T-302(*)/TRC TEST switch to MULT GRID.

(5) Slowly rotate the AM-915(*)/TRC MULTIPLIER GRID control around the desired RF channel setting for a maximum reading on the T-302(*)/TRC TEST meter.

(6) Repeat the procedures given in (2) through (5) above for a maximum reading (not more than 20 microamperes) on the TEST meter. If the reading decreases, adjust the T-302(*)/TRC DRIVER OUTPUT COUPLING in the opposite direction by small amounts. Repeat the procedures given in (3) through (5) above after each adjustment until a maximum TEST meter reading (not more than 20 microamperes) is obtained.

(7) Adjust the AM-915(*)/TRC MULTIPLIER OUTPUT COUPLING control two positions above (clockwise) the preset value.

(8) Set the T-302(*)/TRC TEST switch to MULT CATH.

(9) Slowly adjust the AM-915(*)/TRC MULTIPLIER PLATE control for a very slight dip on the T-302(*)/TRC TEST meter, and a maximum indication on the ME-82/U.

(10) Set the T-302(*)/TRC TEST switch to PWR AMPL GRID.

(11) Slowly rotate the AM-915(*)/TRC POWER AMPLIFIER GRID control

around the desired RF channel setting for a maximum reading on the transmitter TEST meter, and the ME-82/U.

(12) Repeat the procedures given in (7) through (11) above for a maximum reading on the T-302(*)/TRC TEST meter. If the TEST meter reading decreases, adjust the AM-915(*)/TRC MULTIPLIER OUTPUT COUPLING control by small amounts in the opposite direction. Repeat the procedures given in (8) through (11) above for each adjustment until a maximum TEST meter reading is obtained.

(13) Adjust the AM-915(*)/TRC POWER AMPLIFIER PLATE control for a maximum reading on the ME-82/U.

(14) Adjust the AM-915(*)/TRC AMPLIFIER OUTPUT COUPLING control for a maximum reading on the ME-82/U.

(15) Alternately repeat the procedures given in (13) and (14) above for a maximum reading on the ME-82/U. (Increases obtained by adjusting the AM-915(*)/TRC AMPLIFIER OUTPUT COUPLING control will be very slight.)

(16) Set the PP-685(*)/TRC 750V ADJ switch for a reading of 750 ±30 on the DC VOLTS meter.

(17) Allow the T-302(*)/TRC a 30-minute warmup period and retune *b* through *j* and (1) through (16) above.

(18) The ME-82/U will normally indicate between 70 and 115 watts (minimum is 50). (The indications may be less with the dummy filter.) If additional power is required, perform the procedures given in (*a*) and (*b*) below.

(*a*) Adjust the AM-915(*)/TRC SCREEN VOLTS ADJ. control for a maximum indication (not more than 25 microamperes) on the T-302(*)/TRC TEST meter.

Caution: **Do not allow the TEST meter reading to exceed 25 microamperes; damage to the T-302(*)/TRC power amplifier tubes may result.**

(*b*) Repeat the procedures given in (13) through (15) above.

Note. To decrease the ME-82/U indication either adjust the AM-915(*)/TRC SCREEN VOLT ADJ control or turn the PP-685(*)/TRC 750V ADJ switch to a lower position (counterclockwise).

(19) Proceed to *q* below.

n. Amplifier-Multiplier, Radio Frequency AM-1178/GRC (D-Band) (fig. 3-8).

(1) Set the T-302(*)/TRC TEST switch to MULT GRID.

(2) Adjust the T-302(*)/TRC DRIVER TUNE control for a maximum reading on the TEST meter.

(3) Adjust the AM-1178/GRC MULTIPLIER control for a maximum reading on the T-302(*)/TRC TEST meter.

(4) Rotate the AM-1178/GRC POWER AMPLIFIER PLATE control either side of the desired RF channel. If there is a power indication on the ME-82/U, adjust the AM-1178/GRC MULTIPLIER PLATE and POWER AMPLIFIER GRID controls for a maximum reading.

(5) If there is no power indication on the ME-82/U, set the PP-685(*)/TRC 750V ADJ control to position 2, and repeat the procedure given in (4) above. (See *j*(4) above.)

Note. Even if there is no power indication on the ME-82/U, continue with (6) below.

(6) Set the PP-685(*)/TRC 750V ADJ switch for a 750 ±40 reading on the DC VOLTS meter. Adjust the AM-1178/GRC POWER AMPLIFIER PLATE, POWER AMPLIFIER GRID, and MULTIPLIER PLATE controls for a maximum reading on the ME-82/U. *If a power output indication is not obtained on the ME-82/U within 60 seconds after application of 750 ±40 volts, set the PP-685(*)/TRC 750V ADJ switch to off position.* Start again by repeating the applicable procedures given in paragraphs *a* through *j* above, and then (1) through (6) above. Be sure to allow a 60-second delay before resetting the PP-685(*)/TRC 750V ADJ switch to position 1.

(7) Set the T–302(*)/TRC TEST switch to PWR AMPL CATH.
(8) Adjust the AM–1178/GRC SCREEN VOLTS ADJ. control for a reading of 25 microamperes on the T–302(*)/TRC TEST meter.
(9) Set the T–302(*)/TRC TEST switch to the MULT GRID position.
(10) In the order given, adjust the T–302(*)/TRC DRIVER OUTPUT COUPLING in small increments and retune the T–302(*)/TRC DRIVER TUNE control and the AM–1178/GRC MULTIPLIER GRID control for a reading of 30 to 45 microamperes on the T–302(*)/TRC TEST meter.
(11) Set the T–302(*)/TRC TEST switch to PWR AMPL GRID.
(12) In the order given, adjust the AM–1178/GRC MULTIPLIER OUTPUT COUPLING, MULTIPLIER PLATE, and POWER AMPLIFIER GRID controls for a maximum reading on the T–302(*)/TRC TEST meter. If no indication is obtained on the test meter, tune for a maximum indication on the ME–82/U.
(13) Allow the T–302(*)/TRC a 30-minute warmup period and retune (*b* through *j* and (1) through (12) above).
(14) The ME–82/U will indicate 50 to 100 watts. (This reading may be slightly lower if a dummy filter is used.) If additional power is required, perform the procedures given in (*a*), (*b*), and (*c*) below.
(*a*) Set the T–302(*)/TRC TEST switch to PWR AMPL CATH.
(*b*) Adjust the AM–1178/GRC SCREEN VOLTS ADJ. control for a maximum indication (not more than 25 microamperes) on the T–302(*)/TRC TEST meter.

Caution: **Do not allow the indication on the TEST meter to exceed 25 microamperes; damage to the T–302(*)/TRC power amplifier may result.**

(*c*) Adjust the T–302(*)/TRC DRIVER TUNE control and the AM–1178/GRC MULTIPLIER, MULTIPLIER PLATE, POWER AMPLIFIER, and POWER AMPLIFIER PLATE controls for a maximum reading on the ME–82/U.

Note. To decrease the ME–82/U indication, either adjust the AM–1178/GRC SCREEN VOLTS ADJ control, or set the PP–685(*)/TRC 750V ADJ switch to a lower position (counterclockwise).

(15) Proceed to *q* below.

o. Amplifier-Converter, Radio Frequency AM–2537/TRA–25 (F-Band) (fig. 3–9).

(1) Set the PP–685(*)/TRC DC TEST switch to 750 LOWER SCALE.
(2) Set the PP–685(*)/TRC 750V ADJ switch for a reading of 850±35 on the DC VOLTS meter. (See *j*(5) above.)
(3) Set the T–302(*)/TRC TEST switch to MULT CATH.
(4) Set the AM–2537/TRA–25 TEST MULT CATH switch to MIXER CATH.
(5) Adjust the T–302(*)/TRC DRIVER TUNE control for a maximum reading on the TEST meter.
(6) Adjust the T–302(*)/TRC DRIVER OUTPUT COUPLING control for a reading of 30 microamperes on the TEST meter.
(7) Adjust the AM–2537/TRA–25 MIXER TUNE, MIXER COUPLING, and PA TUNE controls for a maximum (more than 10 watts) reading on the ME–82/U.
(8) Allow the T–302(*)/TRC a 30-minute warmup period and retune (*b* through *j* and (1) through (7) above).
(9) Proceed to *q* below.

p. Amplifier-Converter AM–3204A/TRC–24 and Oscillator-Multiplier O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 (J-Band) (figs. 3–10 and 3–11).

(1) Set the PP–685(*)/TRC DC TEST switch to 750 LOWER SCALE.
(2) Set the PP–685(*)/TRC 750V ADJ switch for a reading of 850 ±35 on the DC VOLTS meter. (See *j*(4) above.)
(3) Set the PP–685(*)/TRC 150V DC switch to OFF.
(4) Set the T–302(*)/TRC TEST switch to MULT CATH.
(5) Set the AM–3204A/TRC–24 TEST MULT CATH switch to INJECTION DR.

(6) Adjust Oscillator-Multiplier O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 (J-band) INJECTION DRIVE control for a maximum reading on the T–302(*)/TRC TEST meter (approximately 20 microamperes).

(7) Set the AM–3204A/TRC–24 TEST MULT CATH switch to MIXER CATH.

(8) Adjust the AM–3204A/TRC–24 INJECTION MULTIPLIER TUNE and INJECTION MULTIPLIER COUPLING controls for a maximum reading on the T–302(*)/TRC TEST meter.

(9) Set the PP–685(*)/TRC 150V DC switch to ON.

(10) Adjust the T–302(*)/TRC DRIVER TUNE control for a maximum reading on the TEST meter.

Caution: **In the procedures given in (11) through (17) below, do not permit the T–302(*)/TRC TEST meter reading to exceed 48 microamperes; damage to AM–3204A/TRC–24 mixer and power amplifier tubes may result. To prevent the TEST meter reading from exceeding 48 microamperes, turn the PP–648(*)/TRC 750V ADJ switch counterclockwise to a lower position.**

(11) Adjust the T–302(*)/TRC DRIVER OUTPUT COUPLING control for a maximum reading (approximately 30 microamperes).

(12) Set the AM–3204A/TRC–24 TEST MULT CATH switch to PA CATH.

(13) Adjust the AM–3204A/TRC–24 MIXER TUNE and MIXER COUPLING controls for a maximum indication on the T–302(*)/TRC TEST meter and perform the procedure given in (14) or (15) below as applicable.

(14) If the TEST meter reading noted in (13) above is less than 30 microamperes, readjust the T–302(*)/TRC DRIVER OUTPUT COUPLING and DRIVER TUNE controls for a maximum reading.

(15) If the TEST meter reading noted in (13) above is more than 30 microamperes, turn the PP–685(*)/TRC 750V ADJ switch counterclockwise until the reading does not exceed 30 microamperes.

(16) Adjust the AM–3204A/TRC–24 POWER AMPL TUNE control for a maximum reading on the ME–82/U.

(17) Adjust the AM–3204A/TRC–24 POWER AMPL COUPLING control for a maximum reading (more than 10 watts).

(18) Allow the T–302(*)/TRC a 30-minute warmup period and retune (*b* through *j* above and (1) through (18) above).

(19) Proceed to *q* below. These procedures apply with Oscillator-Multiplier O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 used with the T–302(*)/TRC rather than the dummy filter, and the CG–2636/U used rather than the CG–1030/U.

q. Adjusting Transmitter, Radio T–302(*)/TRC Output Power, and Alarm (Dummy Filter Installed). With the dummy filter (fig. 1–1) installed in the T–302(*)/TRC, follow the procedures below. When a bandpass filter is installed, rather than a dummy filter, follow the procedures in *r* below.

(1) Set the PP–685(*)/TRC 750V DC switch to OFF.

(2) Disconnect the CG–718/U with the attached ME–82/U from the T–302(*)/TRC ANTENNA jack.

(3) Connect the CG–1030/U (the CG–1886/U for the AN/TRA–25, and the CG–1030A/U for the AN/TRA–25A), attached to the T–302(*)/TRC antenna of the T–302(*)/TRC ANTENNA jack.

(4) Set the T–302(*)/TRC TEST switch to the FWD PWR position.

Caution: **Allow a delay of 1 minute before proceeding, or damage to the PP–685(*)/TRC may result.**

(5) Set the PP–685(*)/TRC 750V DC switch to ON.

(6) Adjust the T–302(*)/TRC power amplifier plate control for a maximum reading on the TEST meter.

(7) Adjust the T–302(*)/TRC AMPLIFIER OUTPUT COUPLING control on the tuning head used for a maximum reading on the TEST meter.

(8) Repeat the procedures given in (6) and (7) above until no further increase is noted on the TEST meter. If the TEST meter reading decreases, adjust the AMPLIFIER OUTPUT COUPLING

control in the opposite direction by small amounts, repeating (6) above for each adjustment.

(9) When the procedure in (8) above is completed, note the reading on the TEST meter.

(10) Adjust the T-302(*)/TRC DRIVER TUNE control for a reading approximately 70 percent of that noted in (9) above.

(11) Adjust the T-302(*)/TRC THRESHOLD ADJ to the point where the LOW PWR ALARM light just illuminates.

(12) Set the T-302(*)/TRC ALARM switch to NOR.

(13) Adjust the T-302(*)/TRC THRESHOLD ADJ control until the LOW PWR ALARM light illuminates and the buzzer sounds.

Caution: **This adjustment is critical. After the LOW PWR ALARM light illuminates and the buzzer sounds, further clockwise rotation of the THRESHOLD ADJ control will cause improper calibration. *Do not rotate* the THRESHOLD ADJ control more than is necessary to illuminate the light and sound the buzzer.**

(14) Adjust the DRIVER TUNE control for a maximum reading on the TEST meter. This action will extinguish the LOW PWR ALARM light and silence the buzzer.

(15) Set the ALARM switch to REV. The LOW PWR ALARM light will not illuminate and the buzzer will sound.

(16) Set the ALARM switch to NOR.

(17) Adjust the DRIVER TUNE control as in (10) above.

r. Adjusting Transmitter, Radio T-302(*)/TRC Output Power, and Alarm (Bandpass Filter Installed).

(1) Perform the procedures given in *q*(1) through (4) above; then replace the dummy filter with the correct bandpass filter, and perform the procedures given in (5) above.

(2) Adjust the tuning controls on the bandpass filter for a maximum reading on the T-302(*)/TRC TEST meter.

Caution: **When the tuning controls are turned completely counterclockwise, do not attempt to force them past their stops because improper calibration will result.**

(3) Perform the procedure given in *q*(6) through (17) above.

3-6. Tuning Procedures for R-417(*)/TRC

a. General. Each tuning head (A-, B-, C-, D-, F-, or J-band) used in the R-417(*)/TRC requires a slightly different tuning procedure. Subparagraph *b* below covers those tuning procedures that apply to all R-417(*)/TRC tuning heads. Subparagraphs *c* through *g* below cover special tuning procedures that apply to the A-, B-, D-, F-, and J-bands, respectively. Subparagraph *h* covers output and alarm adjustments that apply to all the R-417(*)/TRC tuning heads.

b. Tuning Receiver, Radio R-417(*)/TRC (fig. 3-2).

(1) Install the dummy filter.

(2) Set the POWER switch to ON.

(3) Allow the R-417(*)/TRC a 10-minute warmup period.

(4) Set the MEASURE switch to 2ND LIM.

(5) Perform the tuning procedure for the applicable R-417(*)/TRC tuning head.

c. Amplifier-Converter AM-1179/GRC (A-Band) or AM-913(*)/TRC (B-Band) (fig. 3-12).

(1) Adjust the R-417(*)/TRC SQUELCH control for a reading of 5 microamperes on the R-417(*)/TRC MEASURE meter.

(2) Set the R-417(*)/TRC ALARM switch to REV to silence the buzzer.

(3) Hold the R-417(*)/TRC AFC-OFF-CAL switch at CAL.

(4) Set the R-417(*)/TRC ALARM switch to NOR.

(5) Rock the AM-1179/GRC or AM-913/TRC tuning control around the RF AMP dial red calibration marking for a simultaneous maximum reading on the R-417(*)/TRC MEASURE meter and a zero reading on the FREQ DRIFT meter.

(6) Adjust the AM-1179/GRC or AM-913/TRC INDEX control until the index line of the RF AMP dial is directly over

the red calibration mark nearest the desired RF channel number.

(7) Release the R-417(*)/TRC AFC-OFF-CAL switch.

(8) Set the R-417(*)/TRC ALARM switch to REV.

(9) Adjust the AM-1179/GRC or AM-913/TRC tuning control until the index line of the RF AMP dial is directly over the desired RF channel number.

(10) Set the R-417(*)/TRC ALARM switch to NOR.

(11) Proceed with the procedure given in *h* below.

d. Amplifier-Converter AM-914(*)/TRC (C-Band) (fig. 3-13).

(1) Adjust the R-417(*)/TRC SQUELCH control counterclockwise for a reading of 5 microamperes on the MEASURE meter.

(2) Set the R-417(*)/TRC ALARM switch to REV to silence the buzzer.

(3) Adjust the AM-914(*)/TRC tuning control for a maximum reading on the R-417(*)/TRC MEASURE meter. Set ALARM switch to NOR to silence buzzer.

(4) Adjust the R-417(*)/TRC SQUELCH control so that the reading on the MEASURE meter does not exceed 30 microamperes.

(5) Hold the R-417(*)/TRC AFC-OFF-CAL switch at CAL.

(6) Adjust the AM-914(*)/TRC FINE control for a zero reading on the R-417(*)/TRC FREQ DRIFT meter and a simultaneous maximum reading on the MEASURE meter.

Note. It is necessary to make the final adjustment of the FINE control in the same direction as in (6) above, or backlash error will result. Therefore, *the direction of rotation noted in (6) above is for use with the procedure (9) below.*

(7) Adjust the AM-914(*)/TRC INDEX control so that the OSC dial index line is directly over the red calibration mark nearest the desired RF channel number.

(8) Release the R-417(*)/TRC AFC-OFF-CAL switch.

(9) Adjust the AM-914(*)/TRC FINE control so that the index line of the OSC dial is directly over the desired RF channel number, see note following (6) above.

(10) Adjust the tuning control so that the index line of the RF AMP dial is directly over the desired RF channel number.

(11) Proceed with the procedure given in *h* below.

e. Amplifier-Converter AM-1177/GRC (D-Band) (fig. 3-14).

(1) Hold the R-417(*)/TRC AFC-OFF-CAL switch at CAL.

(2) Adjust the AM-1177/GRC oscillator tuning control for a zero reading on the R-417(*)/TRC FREQ DRIFT meter. Check to see that for a small clockwise rotation of the oscillator tuning control, the FREQ DRIFT pointer deflects to the left, and that for a small counterclockwise rotation of this control, the pointer deflects to the right. Reset the oscillator tuning control to a zero reading on the FREQ DRIFT meter.

(3) Adjust the AM-1177/GRC RF amplifier tuning control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(4) Adjust the AM-1177/GRC FINE TUNE control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(5) Release the R-417(*)/TRC AFC-OFF-CAL switch.

(6) Adjust the AM-1177/GRC oscillator tuning control so that the index line of the OSC dial is directly over the desired RF channel number.

(7) Adjust the AM-1177/GRC RF amplifier tuning control so that the index line of the RF AMP dial is directly over the desired RF channel number.

(8) Adjust the AM-1177/GRC FINE TUNE control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(9) Adjust the AM-1177/TRC RF amplifier tuning control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(10) Proceed with the procedure given in *h* below.

f. Mixer Stage, Frequency CV-932/TRA-25 (F-Band) (fig. 3-15).

(1) Perform the procedure given in *c* above for the AM-913(*)/TRC.

(2) Adjust the CV-932/TRC-25 mixer tuning dial for a maximum reading on the R-417(*)/TRC MEASURE meter.

(3) Adjust the CV-932/TRA-25 antenna tuning dial for a maximum indication on the R-417(*)/TRC MEASURE meter.

(4) Proceed with the procedure given in *h* below.

g. Amplifier-Converter AM-3203A/TRC-24 and Filter, Bandpass F-691/TRC-24 (J-*Band*) (figs. 3-16 and 3-17).

(1) Set the R-417(*)/TRC ALARM switch to REV.

(2) Adjust the R-417(*)/TRC SQUELCH control clockwise for a 5-microampere reading on the MEASURE meter.

(3) Depress and hold the AM-3203A/TRC-24 CALIBRATE switch.

(4) Set the R-417(*)/TRC ALARM switch to NOR.

(5) Carefully adjust the AM-3203A/TRC-24 for a simultaneous maximum reading on the R-417(*)/TRC MEASURE meter and a zero reading on the R-417(*)/TRC FREQ DRIFT meter.

(6) Release the AM-3203A/TRC-24 CALIBRATE switch.

(7) Set the R-417(*)/TRC ALARM switch to REV.

(8) Adjust the AM-3203A/TRC-24 INDEX control until the index line of the OSCILLATOR dial is directly over the red calibration mark nearest the desired RF channel number.

(9) Adjust the AM-3203A/TRC-24 oscillator tuning control until the index line of the OSCILLATOR dial is directly over the desired RF channel number.

(10) Connect the receiving antenna cable (CG-2636/U) to the ANTENNA jack of the R-417(*)/TRC.

(11) Set the R-417(*)/TRC ALARM switch to REV.

(12) Set the R-417(*) AFC-OFF-CAL switch to AFC.

(13) Set the R-417(*)/TRC MEASURE switch to SIG LEV.

(14) Listen for a received signal on Handset H-90/U.

(15) Adjust the AM-3203A/TRC-24 preselector tuning control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(16) If Filter, Band Pass F-691/TRC-24 is installed, adjust its tuning control for a maximum reading on the R-417(*)/TRC MEASURE meter.

(17) Proceed with the procedure given in *h* below.

h. Adjusting Receiver, Radio R-417(*)/TRC Output and Alarm.

(1) Disconnect the CG-1031/U from the ANTENNA jack and the CAL OUT jack.

(2) Connect the CG-718/U between the ANTENNA jack and the ME-82/U.

(3) Remove dummy filter, insert correct bandpass filter, and tune its controls for maximum indication on the receiver MEASURE meter.

(4) Slowly rotate the SQUELCH control counterclockwise just to the point where the buzzer sounds and the ALARM light illuminates. This is the final setting of the SQUELCH control.

***Caution:* This adjustment is critical. *Do not rotate* the SQUELCH control more than is necessary to illuminate the ALARM light and sound the buzzer, or improper calibration will result.**

(5) Set the ALARM switch to REV to silence the buzzer.

(6) Set the AFC-OFF-CAL switch to AFC.

(7) Disconnect the CG-718/U with the attached ME-82/U from the ANTENNA jack.

(8) Connect the CG-1030/U (A-, B-, C-, and D-bands), CG-1886/U (F-band, AN/TRA-25), CG-1030A/U (F-band, AN/TRC-25A), or CG-2636/U (J-band, OA-3668A/TRC-24) attached to the receiving antenna of the ANTENNA jack.

(9) Set the ALARM switch to NOR when the buzzer sounds, indicating the presence of a signal.

(10) Set the MEASURE switch to SIG LEV.

(11) If there is a buzzer sound but no indication on the MEASURE meter, carefully adjust the SQUELCH control until the buzzer is just silenced.

(12) Adjust the bandpass controls again as in (3) above for a maximum reading on the MEASURE meter.

-7. SYSTEM CHECKING PROCEDURES

a. Without Antenna .

(1) Tune the T-302(*)/TRC transmitter to the desired channel with Wattmeter AN/URM-120 using the procedure described in paragraph 3-5.

(2) Tune the R-417(*)/TRC to the same channel using the procedure described in paragraph 3-6.

(3) Turn off the transmitter +150V and +750V at power supply PP-685(*)/TRC and set 750V adjust switch to position 1.

(4) Using the adapter connectors shown in fig. 3-18, connect the signal sampler between the transmitter and wattmeter. Set the sampler coupling to minimum (almost all the way out, with just enough penetration of the sampler to permit locking), and connect the sampler coupling to the receiver antenna.

(5) Adjust the receiver squelch control for a zero UA reading on the signal strength meter and silence the alarm by switching to REV.

(6) Set the PP-685(*)/TRC +150 and +750 switches to ON.

(7) The low transmitter output power of about 5 to 10 watts should produce a receiver signal strength meter indication of 30 UA or more. If the signal strength indication is less than 30 UA, adjust the coupling from the signal sampler until the receiver signal strength meter indicates 30 UA and lock the sampler.

(8) Set T-302(*)/TRC MEASURE switch to MOD 1K IN position.

(9) Connect test leads from SG-71/FCC signal generator to pins E and F of RECEIVER jack on T302(*)/TRC transmitter.

(10) Set INPUT ADJ on T-302(*)/TRC at position 15.

(11) Set OUTPUT ADJ on R-417(*)/TRC at position 15.

(12) Adjust output level of SG-71/FCC signal generator for 0 db indication on MEASURE meter.

(13) Set MEASURE switch on R-417(*)/TRC to 1 KC OUT position.

(14) Adjust OUTPUT ADJ to obtain a 0 db indication on MEASURE meter.

(15) Set 750 VDC switch to OFF.

(16) Disconnect the UG-636A/U, signal sampler, CG-409E/U, CG-718A/U, and SG-71/FCC from equipment.

(17) Reconnect the CX-2252/U.

b. With Antenna.

The chart in(1)below gives normal modulation settings and readings when Transmitter, Radio T-302(*)/TRC and Receiver, Radio R-417(*)/TRC are used in conjunction with carrier equipment AN/TCC-7. If, during equipment operation, settings or readings other than normal are obtained, the chart in(2)below may be used as a guide for determining what corrective action may be attempted.

(1) *Normal Modulation Chart.*

Band	1 T-302(*)/TRC INPUT ADJ (see note)	2 T-302(*)/TRC 68 KC IN (db)	3 T-302(*)/TRC MOD ADJ (db)	4 T-302(*)/TRC MOD 68 KC IN (db)	5 R-417(*)/TRC OUTPUT ADJ	6 R-417(*)/TRC 68 KC OUT (db)
A	15	0	+2	+2	25	0
B	15	0	+2	+2	19	0
C	15	0	0	0	15	0
D	15	0	0	0	12	0
F	15	0	+2	+2	19	0
J A-scale	15	0	+2	+2	25	0
J B-scale	15	0	+2	+2	19	0
Tolerance	See note	±0.5	None	±1.0	±2	±0.5

Note. The setting of 15 for the T-302(*)/TRC INPUT ADJ assumes that the terminal radio equipment and carrier equipment are collocated. If the terminal radio equipment and carrier equipment are not collocated, the normal INPUT ADJ setting on that T-302(*)/TRC is increased by 1 for each 1,320 feet of intermediate spiral-four cable used and the tolerance is increased to ±2. *For example,* if the maximum permissible separation of 1 mile (4 cable reels) is used, the normal INPUT ADJ setting is 17 to 21 (19 ±2).

(2) *Operator's System Modulation Corrective Action Chart.*

Defect	Corrective action
T-302(*)/TRC INPUT setting of 14 to 16 (see note, *a* above) does not produce 68 KC IN reading between −0.5 and +0.5 db.	1. See that the pointer on INPUT ADJ control indicates OFF when control is fully counterclockwise. 2. At a terminal, see that the 68-kc level at the AN/TCC-7 GROUP PANEL TR AMP OUT jack has been correctly set. 3. At a relay, see that the R-417(*)/TRC 68 KC OUT reading is between −0.5 db and +0.5 db. 4. Check the cable and connection between the T-302(*)/TRC and the interconnecting AN/TCC-7 or relay receiver. 5. If the checks in 1 through 4 above are correct: *a.* At a terminal, either or both the AN/TCC-7 and the T-302(*)/TRC require replacement and turn-in for maintenance. *b.* At a relay, either the relay R-417(*)/TRC or the T-302(*)/TRC requires replacement and turn-in for maintenance. 6. If immediate replacement is not practical, adjust the INPUT ADJ control as necessary to obtain a 68 KC IN reading of 0 db ±0.5.

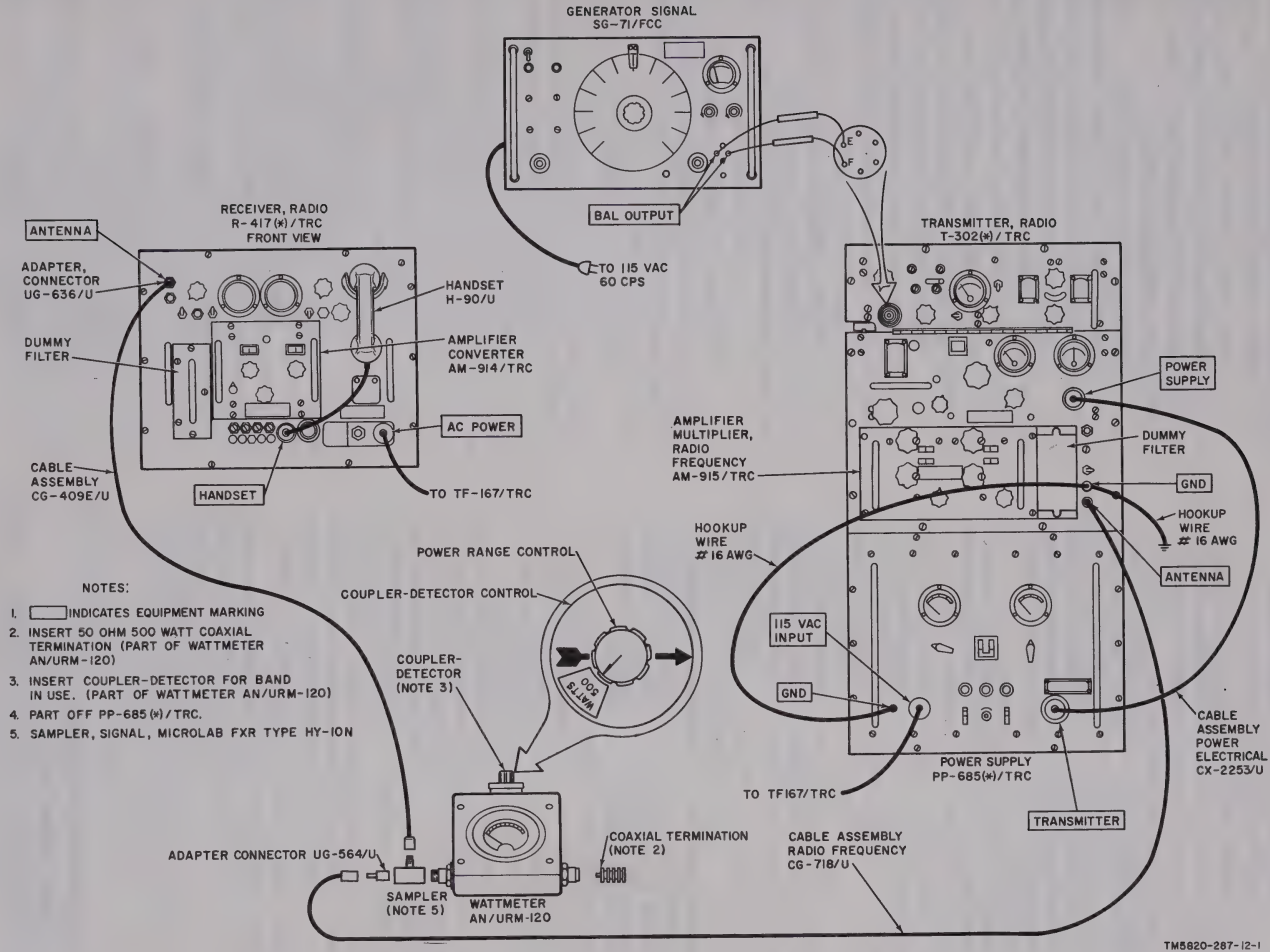


Figure 3-18. Test setup for checking modulation without antenna.

Defect	Corrective action
	7. Continue with this chart. Further defects may localize the problem.
With a T–302(*)/TRC 68 KC IN reading of 0 db ±0.5 and the MOD ADJ setting as in *a* above, the MOD 68 KC IN is not within 1.0 db of the value listed in *a* above.	1. Check the MOD ADJ and MOD TRIM settings. 2. If the settings do not clear the trouble, the T–302(*)/TRC requires replacement and turn-in for maintenance. 3. If immediate replacement is not practical, proceed as follows: *a.* Set the INPUT ADJ control for a 68 KC OUT reading of 0 db ±0.5 at the distant receiver. *b.* The OUTPUT ADJ at the distant receiver must be set exactly to the value found in column 5 (*a* above).
The R–417(*)/TRC OUTPUT ADJ setting in *a* above does not produce a 68 KC OUT reading of 0 db ±0.5.	1. See that the pointer of the OUTPUT ADJ control indicates OFF when the control is fully counterclockwise. 2. Have the operator of the distant T–302(*)/TRC recheck INPUT ADJ, MOD ADJ, and MOD TRIM settings. 3. Have tubes V105, V106, and V107 replaced at the distant T–302(*)/TRC. 4. If the procedure given in 1, 2, and 3 above do not clear the trouble, either or both the R–417(*)/TRC and the distant T–302(*)/TRC require replacement and turn-in for maintenance. 5. If immediate replacement is not practical, adjust the OUTPUT ADJ control as necessary to obtain a 68 KC OUT reading of 0 db ±0.5.

3–8. Operating Procedures

a. Radio Section Lineup.

(1) *General.* When a radio section consists of a single radio hop (A, fig. 1–21), perform the procedures in (2) below. When a radio section consists of several radio hops (B, fig. 1–21), perform the procedures in (2) below for *each* radio hop, and the procedures in (3) below for the overall radio section.

(2) *Single-hop radio section lineup.* Designate the radio set or radio terminal set at one end of the radio section as station A (control station). Designate the radio set or radio terminal set at the other end of the radio section as station B (end station). Proceed as outlined below.

(*a*) Disconnect the leads on the REC terminals (fig. 3–2) at stations A and B.

(*b*) Connect a 130-ohm resistor across the REC terminals (fig. 3–2) at stations A and B.

(*c*) Perform the following procedures at station A:

1. Operate the MEASURE switch (fig. 3–1) to MOD 68 KC IN.

2. Operate the order-wire circuit (*b*(4) below) and instruct the operator at station B to perform the procedures in (*d*) below.

3. Operate the MEASURE switch to MOD ADJ.

(*d*) Perform the following procedures at station B when instructed by the operator of station A:

1. Operate the MEASURE switch (fig. 3–2) to 1 KC OUT.

2. Adjust the OUTPUT ADJ control for a 0-db indication on the MEASURE meter.

3. Operate the MEASURE switch (fig. 3–1) to MOD 68 KC IN.

4. Operate the order-wire circuit (*b*(4) below) and instruct the operator at station A to perform the procedures in (*e*) below.

5. Operate the MEASURE switch to MOD ADJ.

(*e*) Perform the following procedures at station A when instructed by the operator of station B:

1. Operate the MEASURE switch (fig. 3–1) to MOD 68 KC IN.

2. Operate the MEASURE switch (fig. 3–2) to 1KC OUT.

3. Adjust the OUTPUT ADJ control for a 0-db indication on the MEASURE meter.

4. Operate the order-wire circuit (*b*(4) below) and instruct the operator of station B to perform the procedures in (*f*) below.

(*f*) Operate the MEASURE switch to MOD 68 KC IN when instructed by the operator of station A.

(*g*) If the procedures in (3) below are not required, perform the procedures in *1* below. If the procedures given in (3) below are required, perform the procedures given in *2* below.

1. Single-link radio section.

(a) Disconnect the 130-ohm resistor from the REC terminals (fig. 3–2) at stations A and B.

(b) Connect the leads ((2)(*a*) above) to the REC terminals at stations A and B.

2. Multiple-link radio section.

(a) Disconnect the 130-ohm resistor from the REC terminals (fig. 3–2) at all stations except the end stations.

(b) Connect the leads ((2)(*a*) above) to the REC terminals at all stations except the end stations.

(3) *Multiple-link radio section lineup.* Perform the procedures in (*a*) below to line up the links of the radio section for a signal transmitted from the control station to the end station. Perform the procedures in (*b*) below to line up the links of the radio section for a signal transmitted from the end station to the control station. Perform the procedures in (*c*) below when the lineup procedures in (*a*) and (*b*) below have been completed.

(*a*) *Control-station to end station lineup.*

1. Perform the following procedures at the control station:

(a) Operate the order-wire circuit (*b*(4) below) and instruct the operator at the radio relay set or radio repeater set station to perform the procedures given in *2* below.

(b) Operate the MEASURE switch (fig. 3–1) to MOD ADJ.

2. Perform the following procedures at the radio relay set or radio repeater set station when instructed by the operator of the preceding station:

(a) Operate the MEASURE switch (fig. 3–1) to 1 KC IN.

(b) Adjust the INPUT ADJ control for a O-db indication on the MEASURE meter.

(c) Operate the MEASURE switch to MOD 68 KC IN.

(d) Operate the order-wire circuit (*b*(4) below) and instruct the operator at the next radio relay or radio repeater station to repeat these procedures.

Note. If the next station is the end station, instruct the operator to perform the procedure given in (*b*)*1* below.

(e) Operate the MEASURE switch to 1 KC IN.

(*b*) *End-station to control-station lineup.*

1. Perform the procedures in (3)(*a*)*1* above at the end station.

2. Perform the procedures given below for each radio relay set or radio repeater set when instructed by the operator of the preceding station.

(a) Perform the procedures in (3)(*a*), *2*(a), (b), and (c) above.

(b) Operate the order-wire circuit and instruct the operator at the next radio relay or radio repeater station to repeat these procedures.

Note. If the next station is the control station, instruct the operator to perform the procedures in (*c*) below.

(*c*) *Preparation for carrier system lineup.*

1. Disconnect the 130-ohm resistor from the REC terminals (fig. 3–1) at the end stations.

2. Connect the leads ((2)(*a*) above) to the REC terminals at the end stations.

b. Carrier System Lineup.

(1) *General.* The carrier system lineup is performed with the radio section connected to the wire section of the carrier system. The carrier system lineup is

controlled by the operator of the carrier telephone terminal of the wire section designated as the control terminal. When the radio section is used with a 4-channel carrier system, follow the procedures in paragraph (2) below. When the radio section is used with a 12-channel system, follow the procedures in (3) below.

(2) *Carrier system lineup (4-channel).*

(*a*) Perform the procedures outlined below at the end station of the radio section that connects to the carrier terminal line, when instructed by the control terminal operator.

1. Operate the MEASURE switch (fig. 3–1) to MOD 1 KC IN.

2. Adjust the INPUT ADJ control for an indication of the MEASURE meter that corresponds to the indication listed in the chart below.

Transmitter tuning head	Indication
AM–1180/GRC (A-band)	+2
AM–912(*)/TRC (B-band)	+2
AM–915(*)/TRC (C-band)	0
AM–1178/GRC (D-band)	0
AM–2537/TRA–25 (F-band)	+2
AM–3204A/TRC–24 and O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 (J-band)	+2

3. Operate the MEASURE switch (fig. 3–2) to 1 KC OUT.

4. Adjust the OUTPUT ADJ control for a 0-db indication on the MEASURE meter.

(*b*) Perform the procedures in (*a*) above at each station of the radio section until the carrier system lineup has been completed in one direction.

(*c*) Operate the order-wire circuit ((4) below) and inform the control terminal operator that the lineup adjustments have been completed for one direction.

(*d*) When instructed by the control terminal operator, perform the procedures in (*a*), (*b*), and (*c*) above for carrier system lineup in the opposite direction.

(*e*) Operate the order-wire circuit ((4) below) and inform the control terminal operator of completion of the carrier system lineup.

(3) *Carrier system lineup (12-channel).*

(*a*) Perform the procedures below at the end station of the radio section that connects to the carrier terminal line, when instructed by the control terminal operator.

1. Operate the MEASURE switch (fig. 3–1) to MOD 68 KC IN.

2. Adjust the INPUT ADJ control for an indication on the MEASURE meter that corresponds to the indication listed in the chart ((2)(*a*)*2* above).

3. Operate the MEASURE switch (fig. 3–2) to 68 KC OUT.

4. Adjust the OUTPUT ADJ control for a 0-db indication on the MEASURE meter.

(*b*) Perform the procedures in (*a*) above at each station of the radio section until the carrier system lineup procedures have been completed in one direction.

(*c*) Operate the order-wire circuit ((4) below) and inform the terminal office operator that the lineup adjustments are completed in one direction.

(*d*) When instructed by the control terminal operator, perform the procedures in (*a*), (*b*), and (*c*) above for carrier system lineup in the opposite direction.

(*e*) Operate the order-wire circuit ((4) below) and inform the control terminal operator of completion of the carrier system lineup.

(4) *Order-wire operation* (fig. 3–2). The procedures for initiating a call to other stations in the carrier system are outlined in (*a*) below. The procedures for answering a call from another station in the carrier system are outlined in (*b*) below.

(*a*) *Initiating Calls.*

1. Remove Handset H–90/U from the handset rack on the R–417(*)/TRC.

2. Operate the TALK-RING switch to TALK.

3. Listen to the receiver of the H-90/U to determine whether the order-wire circuit is in use.

4. When it has been determined that the order-wire circuit is not in use, hold the R-417(*)/TRC TALK-RING switch to RING for approximately 2 seconds.

Note. When station codes are assigned to each individual station, operate the TALK-RING switch to RING and release it according to the station code of the station being contacted.

5. Operate the TALK-RING switch to TALK.

6. Operate the transmit switch on the H-90/U and speak through the transmitter of the H-90/U.

Note. When listening to the receiver of the H-90/U, it is not necessary to have the transmit switch operated.

(*b*) *Answering Calls.*

1. When a ringing signal is heard, remove the H-90/U from the handset rack.

Note. When station codes are assigned to each station, remove the H-90/U only when the ringing signal corresponds to the station code assignment.

2. Operate the TALK-RING switch to TALK.

3. Perform the procedures given in (*a*) 6 above.

c. *Operating Checks.*

(1) *Daily operating checks.* Each day, while the equipment is in service, operate the specified switches to the positions listed in the following charts and observe the meter indications. If the correct meter indications are not obtained, operate the order-wire circuit (*b*(4) above) and notify the control terminal operator.

(*a*) *Transmitter, Radio T-802(*)/TRC.*

1. *MEASURE switch* (fig. 3-1).

Position	Required indication on MEASURE meter
RF CHAN TUNE	5 to 45 μa.
1 KC ADJ	0 db.
MTR CAL	0 db.
DISCR RF DRIVE	0 db.
1 KC IN	0 db (present only when 1-kc test signal is received from carrier terminal equipment).
68 KC IN	0 db (present only with 12-channel system).
MOD 1 KC IN	Present only when 1-kc test signal is received from carrier terminal equipment.
A-band	+2 db.
B-band	+2 db.
C-band	0 db.
D-band	0 db.
F-band	+2 db.
J-band	+2 db.
MOD 68 KC IN	Present only with 12-channel system.
A-band	+2 db.
B-band	+2 db.
C-band	0 db.
D-band	0 db.
F-band	+2 db.
J-band	+2 db.

2. *TEST switch* (fig. 3-1).

Position	Required indication on TEST meter
OSC MOD PLATE	12 to 16 μa.
DRIVER GRID	10 to 16 μa.
DRIVER CATH	25 μa.
MULT GRID:	
A-band	Not used.
B-band	Not used.
C-band	30 to 40 μa.
D-band	30 to 45 μa.
F-band	Not used.
J-band	Not used.
MULT CATH:	
A-band	Not used.
B-band	Not used.
C-band	14 μa.
D-band	10 to 25 μa.
F-band	Refer to 3 below.
J-band	Refer to 4 below.

Position	Required indication on MEASURE meter
PWR AMPL GRID:	
A-band	20 to 25 μa.
B-band	20 to 25 μa.
C-band	20 to 25 μa.
D-band	1 to 25 μa.
F-band	Not used.
J-band	Not used.
PWR AMPL CATH:	
A-band	25 μa maximum.
B-band	25 μa maximum.
C-band	25 μa maximum.
D-band	25 μa maximum.
F-band	Not used.
J-band	Not used.
FWD PWR:	
A-band	30 μa or higher.
B-band	30 μa or higher.
C-band	30 μa or higher.
D-band	30 μa or higher.
F-band	10 μa or higher.
J-band	Not used.
REFL PWR:	
A-band	10 μa or lower.
B-band	10 μa or lower.
C-band	10 μa or lower.
D-band	10 μa or lower.
F-band	2 μa or lower.
J-band	Not used.

3. TEST MULT CATH switch (F-band) (fig. 3-9).

Position	Required indication on TEST meter (fig. 3-1) with TEST switch in MULT CATH
1ST TRIP CATH	14 to 16 μa.
DOUB CATH	17 to 20 μa.
MIXER CATH	30 μa.
PA CATH	35 to 45 μa.
REC XTAL CUR	10 μa.

4. TEST MULT CATH switch (J-band) (fig. 3-10).

Position	Required indication on TEST meter of T-302(*)/TRC (fig. 3-1) with TEST switch at MULT CATH (μa)
B+ VOLTS	38 to 42
OSC CATH	14 to 20
DBLR CATH	12 to 20
AMPL CATH	16 to 26
INJECTION DR	20 to 30
CATH BIAS	36 to 44
MULT CATH	6 to 30
MIXER CATH	15 to 48
PA CATH	35 to 48

(b) Receiver, Radio R-417(*)/TRC (fig. 3-2).

MEASURE switch position	Required indication on MEASURE meter
OSC	15 μa or higher.
MIX	15 μa or higher. (Not used with A-, and D-bands.)
SIG LEV	20 to 37 ua.
1ST LIM	3 ua or higher.
2D LIM	10 ua or higher.
MTR CAL	0 db (when T-302(*)/TRC is in MTR CAL).
1 KC OUT	0 db ±0.5 (when carrier equipment is connected and sending 1-KC test signal).
68 KC OUT	0 db ±0.5.
B+	+29 to +30 μa.

(c.) Power Supply PP-685(*)/TRC (fig. 3-3)

Position on DC TEST switch	Indication on meter (volts)	
	AC VOLTS	DC VOLTS
150 UPPER SCALE	115±5.5	150.
750 LOWER SCALE:		
A-band	115±5.5	800.
B-band	115±5.5	850.
C-band	115±5.5	750.
D-band	115±5.5	750.
F-band	115±5.5	900.
J-band	115±5.5	850.
275 LOWER SCALE:		
A-band	115±5.5	275 maximum.
B-band	115±5.5	275 maximum.
C-band	115±5.5	275 maximum.
D-band	115±5.5	275 maximum.
F-band	115±5.5	350.
J-band	115±5.5	300.

d. Modulation Levels for Fewer than Maximum Channels. When fewer than the maximum number of channels are to be used, the setting of the T-302(*)/TRC INPUT ADJ control may be increased over the amount discussed in paragraph 2-8*i*. The setting of the R-417(*)/TRC OUTPUT ADJ control must be reduced accordingly. The chart below gives the permissible increase in modulation levels.

Number of channels empty	Channel numbers to be used	Permissible increase in INPUT ADJ
1	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	0
2	3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1
3	4, 5, 6, 7, 8, 9, 10, 11, 12	2
4	5, 6, 7, 8, 9, 10, 11, 12	3
5	6, 7, 8, 9, 10, 11, 12	4
6	7, 8, 9, 10, 11, 12	5
7	8, 9, 10, 11, 12	6
8	9, 10, 11, 12	7
9	10, 11, 12	8
10	11, 12	9
11	12	10

e. Channel Selection for Nonspeech Service. When nonspeech service (for example, teletype, data link, and facsimile) is to be provided, the channels to be used for this service are listed in the chart below.

Number of channels used for nonspeech service	Channels to be used for nonspeech service
1	12
2	12, 10
3	12, 10, 8
4	12, 10, 8, 6

3–9. Operator's Adjustments

Operator's adjustments consist of input loading adjustments (*a* below) and tracking adjustment (*b* below) on the AM–1180/GRC (A-band).

a. Loading Adjustments. Perform the procedures below when the T–302(*)/TRC tuning head (AM–1180/GRC) (A-band) has not been used for at least 1 month or when the correct reading cannot be obtained on the TEST meter (fig. 3–1) during the starting procedures.

(1) Perform the procedures given in paragraph 3–4*a*(1) and (3) and *b*(1) for RF channel No. 1.

(2) Perform the procedures given in paragraph 3–5*a* through *j*.

(3) Perform the procedures given in paragraph 3–5*k*(1) through (10).

(4) Operate the INPUT LOADING control (fig. 3–5) completely counterclockwise.

(5) Adjust the DRIVER OUTPUT COUPLING (fig. 3–1) for a maximum indication on the TEST meter.

Note. If the TEST meter indication is beyond full scale, turn the INPUT LOADING control (fig. 3–5) clockwise and then adjust the DRIVER OUTPUT COUPLING control (fig. 3–1) and the DRIVER TUNE control for a maximum indication on the TEST meter.

(6) Adjust the INPUT LOADING control (fig. 3–5) for an indication of 35 microamperes ±1 on the TEST meter (fig. 3–1).

(7) Operate the TEST switch to PWR AMPL CATH.

(8) Adjust the SCREEN VOLTS ADJ. control (fig. 3–5) for an indication of 21 microamperes on the TEST meter (fig. 3–1).

(9) Adjust the DRIVER TUNE control and the DRIVER OUTPUT COUPLING control for a maximum indication on the ME–82/U.

(10) Repeat the procedures given in (6) above.

(11) Perform the stopping procedures (para 3–11).

b. Tracking Adjustments.

(1) Perform the procedures given in paragraph 3–4*a*(1) and (3) and *b*(1) for RF channel No. 100.

(2) Perform the procedures given in paragraph 3–5*a* through *k*.

(3) Operate the PLATE TUNE control (fig. 3–5) until RF channel No. 100 appears under the index pointer of the plate tune dial.

(4) Adjust the TRACKING ADJ. control for a maximum indication on the ME–82/U.

(5) Perform the stopping procedures (para 3–11.)

3–10. Operation With Enemy Jamming Interference

When enemy jamming interferes with the reception of the carrier signal, operate the order-wire circuit (para 3–8*b*(4)) and notify the control terminal. When instructed by the control terminal operator, detune the R–417(*)/TRC (*a* below) or change the RF channel frequency (*b* below).

a. Detuning R–417(*)/TRC.

(1) Detune the receiver tuning head slightly above or below the operating RF channel

frequency. The chart below lists the control or controls for the applicable tuning head.

Receiver tuning head	Control
AM–1179/GRC (A-band) and AM–913/TRC (B-band).	Tuning control (fig. 3–12).
AM–914/TRC (C-band)	Tuning control (fig. 3–12).
AM–1177/GRC (D-band)	RF amplifier tuning control (fig. 3–14).
CV–932/TRA–25 (F-band)	Antenna tuning dial (fig. 3–15) and tuning control (fig. 3–12) of AM–913 (*)/TRC.
AM–3203A/TRC–24 (J-band).	PRESELECTOR control (fig. 3–16).
F–691/TRC–24 (J-band)	Tuning control (fig. 3–17).

(2) Adjust the SQUELCH control (fig. 3–2) for best reception. If the reception does not improve, turn the SQUELCH control completely clockwise.

(3) Adjust the tuning controls of the bandpass filter in the R–417(*)/TRC slightly above or below the operating RF channel frequency to attenuate the enemy jamming signal.

(4) Adjust the OUTPUT ADJ control for a maximum indication on the MEASURE meter.

(5) Operate the order-wire circuit (para 3–8*b*(4)) and notify the control office of the effect that the detuning procedures had on the interference caused by the enemy jamming signal.

b. Changing RF Channel Frequency.

(1) Perform the starting procedures (paras 3–4, 3–5, and 3–6).

(2) Perform the lineup procedures (para 3–8*a* and *b*).

(3) Operate the order-wire circuit (para 3–8*b*(4)) and notify the control terminal when the procedures in (1) and (2) above are complete.

3–11. Stopping Procedures

a. Set the R–417(*)/TRC POWER circuit breaker (fig. 3–2) to OFF.

b. Set the PP–685(*)/TRC 750V DC circuit breaker (fig. 3–3) to OFF.

c. Set the PP–685(*)/TRC 150V DC circuit breaker to OFF.

d. Set the PP–685(*)/TRC 115V AC circuit breaker to OFF.

e. If the operation has been completed and power is not needed, stop the PU–286/U engine (TM 11–6115–204–10).

Section III. CONDENSED TUNING PROCEDURE FOR RADIO SET AN/TRC–24 (BANDS B AND C)

Caution: **This tuning procedure is not intended to preclude those tuning procedures given in paragraphs 3–5 and 3–6.**

3–12. Preliminary Instructions

a. This tuning procedure should be used only after *the equipment has been set up for operation* and *the preliminary checks have been made* as given in paragraph 3–4.

b. Personnel will verify that all power switches are at OFF prior to connecting the AN/TRC–24 to ac power source.

c. The T–302(*)/TRC is calibrated at a decade channel number. The assigned channel is classified as a unit channel. Calibrate the T–302(*)/TRC at the nearest decade channel to the assigned unit channel.

(1) If the unit channel is an odd number (not divisible by two), the T–302(*)/TRC will be calibrated at an odd decade channel. Every tenth channel, beginning with 1 is an odd decade channel; thus 1, 11, 21, 31, 241, 251, etc, are *odd* decade channels.

(2) If the unit channel is an even number, the T–302(*)/TRC will be calibrated at an even decade channel. Numbers 10, 20, 30, 240, 250, etc, are *even* decade channels.

–13. Presetting T–302(*)/TRC

Note. Presetting is accomplished from top left to right, nter left to right, and bottom left to right.

a. Insert dummy filter and desired tuning head.	
b. INPUT ADJ	10.
c. MEASURE switch	1 KC ADJ.
d. AFC toggle switch	OFF.
e. XTAL SEL control	DECADE CHANS.
f. PULSED OSC control.	ODD CHANNELS or EVEN CHANNELS.
g. PULSED OSC TUNE control.	Assigned unit channel at indicator.
h. RF CHANNEL TUNE control.	Center desired decade channel in window (near indicator).
i. AFC control	0.
j. DRIVER OUTPUT COUPLING screw.	Number 3 in window.
k. DRIVER TUNE	Assigned unit channel in window.
l. B-band, AMPLIFIER OUTPUT COUPLING.	6.
C-band, MULTIPLIER OUTPUT COUPLING.	6.
C-band, AMPLIFIER OUTPUT COUPLING.	6.
m. All grids and plates on B or C tuning heads.	Assigned unit channel in window.
n. ALARM toggle switch.	OFF (center position).

–14. Adjustment of PP–685(*)/TRC

a. 750V ADJ switch	1.
b. DC TEST switch	150 UPPER SCALE.
c. 150V DC switch	OFF.
d. 750V DC switch	OFF.
e. 115V AC switch	ON.
f. 150V DC switch	ON. (This switch applies plate and screen voltages to the Mo and buffer stages.)
g. 150V ADJ screw	Adjust for 150 volts on DC VOLTS meter, UPPER SCALE.
h. DC TEST switch	750 LOWER SCALE position.
i. 750V DC switch	ON. Wait for meter needle to move. (This switch applies plate and screen voltages to the driver and pa stages. It also applies power to the multiplier for C- and D-bands.)
j. B-band, 750V ADJ switch.	Adjust for 850 volts on DC VOLTS meter.
C-band, 750V ADJ switch.	Adjust for 750 volts on DC VOLTS meter.
k. DC TEST switch	275 LOWER SCALE position.
l. SCREEN VOLTS ADJ screw.	(Located under right-hand handle of tuning head).
B-band	Adjust for 275 volts on DC VOLTS meter.
C-band	Adjust for 200 volts on DC VOLTS meter.
m. 750V ADJ switch	1.
n. 750V DC switch	OFF.

3–15. Presetting R–417(*)/TRC

a. Insert dummy filter and desired tuning head.	
b. ANTENNA and CAL OUT.	Connect together with short coaxial cable or short piece of field wire.
c. MEASURE switch	2ND LIM position.
d. OUTPUT ADJ	15.
e. AFC CAL toggle switch.	OFF.
f. ALARM toggle switch	NOR position.
g. SQUELCH control	Fully clockwise.
h. AFC control (on tuning head).	0.
i. B tuner, RF AMP tuning control.	Adjust until red line nearest unit channel is in center of window.
C tuner, OSC COARSE tuning control.	Push in and turn until red line nearest unit channel is in center of window.
C tuner, RF AMP tuning control.	Adjust unit channel to hairline indicator.
j. POWER switch	ON. (Alarm will stop buzzing within 1 minute.)

3–16. Tuning T–302(*)/TRC

a. 1 KC ADJ screw	Adjust for 0 db on MEASURE meter.
b. MEASURE switch	MTR CAL position.
c. MTR CAL screw	Adjust for 0 db on MEASURE meter.
d. MEASURE switch	DISCR RF DRIVE.
e. DISCR RF DRIVE screw.	Adjust for 0 db on MEASURE meter.
f. MEASURE switch	RF CHAN TUNE.
g. RF CHANNEL TUNE control.	Tune to the nearest decade channel; then vary right and left to obtain maximum indication on MEASURE meter. At the same time, FREQ DRIFT meter reads zero.

h. INDEX control	Adjust index indicator over nearest decade channel in window.
i. XTAL SEL control	UNIT CHANS position.
j. RF CHANNEL TUNE control.	Move to correct unit channel and obtain maximum indication on MEASURE meter, at the same time FREQ DRIFT meter reads zero.
k. AFC switch	ON. This switches the automatic frequency control circuit into operation. A crystal oscillator is used as a reference to keep the MO on the assigned frequency. The output of the afc circuit feeds an electric motor which mechanically tunes the MO if it drifts off-frequency and requires correction.
l. AFC knob	Rotate to plus 5 and release. Control should drift back to approximately zero and stop there. Rotate to minus 5 and release. The control should drift back to approximately zero. (*Note.* If control keeps turning continuously, check para 3–13*f* and *g*.)
m. MEASURE switch	MOD ADJ position. (This switches the 1,000-cycle tone oscillator into operation.)
n. MTR SENS toggle switch.	Hold to right.
o. MOD TRIM screw	Adjust for maximum on MEASURE meter. (If needle pins to right, reduce reading with MOD ADJ screw.)
p. MTR SENS toggle switch.	Release.
q. MOD ADJ screw	B-band. Adjust for plus 2 db on MEASURE meter. C-band: Adjust for 0 db on MEASURE meter.

3–17. B-Band Tuner (AM–912/TRC)

(See para 3–18 for C-band tuner.)

a. 750V DC switch on PP–685(*)/TRC.	ON.
b. TEST switch on T–302(*)/TRC.	PWR AMPL GRID position.
c. DRIVER TUNE control.	Adjust for maximum indication on TEST meter.
d. GRID on tuning head	Adjust for maximum indication on TEST meter.
e. DRIVER OUTPUT COUPLING screw.	Adjust for maximum indication on TEST meter.
f. Readjust DRIVER TUNE and GRID for maximum indication on TEST meter.	
g. DRIVER OUTPUT COUPLING screw.	Readjust for 18–20 on TEST meter.
h. TEST switch	FWD PWR position.
i. PLATE control on AM–912/TRC.	Adjust for maximum indication on TEST meter or ME–82/U.
j. AMPLIFIER OUTPUT COUPLING control.	Adjust for maximum indication on TEST meter.
k. Readjust DRIVER TUNE, GRID, PLATE, and AMPLIFIER OUTPUT COUPLING controls for maximum on TEST meter or ME–82/U.	

3–18. C-Band Tuner (AM–915(*)/TRC)

a. 750V DC switch on PP–685(*)/TRC.	ON.
b. TEST switch	MULT GRID position.
c. DRIVER TUNE control.	Adjust for maximum indication on TEST meter.
d. MULTIPLIER GRID control.	Adjust for maximum indication on TEST meter.
e. DRIVER OUTPUT COUPLING screw.	Adjust for 18–20 on TEST meter.
f. Readjust the controls in *c*, *d*, and *e* above for maximum reading on TEST meter. Do not exceed 20 on meter while readjusting the DRIVER OUTPUT COUPLING screw.	
g. TEST switch	PWR AMPL GRID position.
h. MULTIPLIER PLATE control.	Adjust for maximum indication on TEST meter.
i. MULTIPLIER OUTPUT COUPLING.	Adjust for maximum indication on TEST meter.
j. POWER AMPLIFIER GRID control.	Adjust for maximum indication on TEST meter.
k. TEST switch	FWD PWR position.
l. POWER AMPLIFIER PLATE control.	Adjust for maximum indication on TEST meter or ME–82/U.

m. AMPLIFIER OUTPUT COUPLING.	Adjust for maximum indication on TEST meter.
n. Readjust DRIVER TUNE, MULTIPLIER GRID, MULTIPLIER PLATE, MULTIPLIER OUTPUT COUPLING, POWER AMPLIFIER GRID, POWER AMPLIFIER PLATE, and AMPLIFIER OUTPUT COUPLING controls for maximum indication on TEST meter or ME–82/U.	

3–19. Final T–302(*)/TRC Adjustments

a. 750V DC switch on PP–685(*)/TRC.	OFF.
b. Remove dummy filter and insert proper RF filter bandpass.	
c. RF filter, bandpass	Preset to assigned unit channel (white numbers).
d. 750V DC switch	ON.
e. 750V ADJ switch	Position 2.
f. RF filter, bandpass	Adjust for maximum indication on TEST meter or ME–82/U.
g. DRIVER TUNE control.	Reduce meter reading to approximately 50% of that noted in *f* above.
h. ALARM toggle switch.	NOR position.
i. THRESHOLD ADJ screw.	Adjust until alarm buzzer just comes on.
j. DRIVER TUNE control.	Adjust for maximum output on TEST meter or ME–82/U.
k. Connect antenna to T–302/TRC.	
l. TEST switch	REFL PWR. Meter reading should be 10 microamperes or lower (indicates satisfactory antenna match).

3–20. Tuning R–417(*)/TRC

a. Calibration Procedures.

(1) AFC–OFF–CAL toggle switch.	Hold at CAL.
(2) B-tuner	Vary RF AMP tuning control for maximum indication on MEASURE meter and zero on FREQ DRIFT meter.
(3) C-tuner	Vary OSC FINE control for maximum indication on MEASURE meter and zero on FREQ DRIFT meter.
(4) INDEX control	Adjust hairline indicator over red line in window.

b. Tuning R–417(*)/TRC to Assigned Frequency.

(1) B-tuner, RF AMP tuning control.	Adjust desired unit channel under hairline indicator.
(2) C-tuner, OSC FINE control.	Adjust desired unit channel under hairline indicator.

c. Tuning R–417(*)/TRC to Incoming Signal.

(1) Disconnect short coaxial from ANTENNA terminal.	
(2) Connect antenna to receiver.	
(3) SQUELCH control	Adjust until alarm just rings.
(4) SQUELCH control	Readjust slightly past point where alarm stops ringing.
(5) Periodically search for incoming signal with the RF AMP tuning control of the B-tuner, or the OSC FINE control of the C-tuner.	
(6) Fine tune incoming signal for maximum indication on MEASURE meter and zero on the FREQ DRIFT meter.	
(7) MEASURE switch.	SIG LEV position.
(8) RF filter, bandpass	Preset to desired unit channel and insert in filter slot.
(9) RF filter, bandpass	Adjust for maximum indication on MEASURE meter.
(10) AFC–OFF–CAL toggle switch.	AFC position.
(11) C-BAND, RF AMP tuning control.	Adjust for maximum indication on MEASURE meter.
(12) SQUELCH control.	Readjust slightly past point where alarm stops ringing.
(13) When communication is established, place MEASURE switch on T–302(*)/TRC to MOD 1 KC IN.	

3-21. Systems Lineup

a. Terminal A to Terminal B (A Acts as NCS).

Note. The following steps must be done in sequence, that is, R-417(*)/TRC at first relay, followed by T-302(*)/TRC at first relay, then through other relays to B terminal.

(1) When relays have contacted their stations, connect spiral-four cable between relay A, R-417(*)/TRC and relay B, R-417(*)/TRC.	
(2) All R-417(*)/TRC's, MEASURE switch.	1 KC OUT position.
(3) Terminal A, MEASURE switch on T-302(*)/TRC.	MOD ADJ position.
(4) OUTPUT ADJ on relay and distant terminal R-417(*)/TRC's.	Adjust for 0 db on MEASURE meter.
(5) INPUT ADJ on T-302(*)/TRC's; B-band.	Adjust for plus 2 db on MEASURE meter.
C-band	Adjust for 0 db on MEASURE meter.

b. Terminal B to Terminal A.

(1) Terminal B, MEASURE control.	MOD ADJ position.
(2) Terminal A, MEASURE control.	MOD 1 KC IN position.
(3) Accomplish *a*(3), (4), and (5) as listed above, for R-417(*)/TRC and T-302(*)/TRC from the B to the A direction.	

c. Lineup of Radio Set Used With AN/TCC-7 Telephone Terminal Equipment.

(1) R-417(*)/TRC MEASURE switch.	68 KC OUT position.
(2) R-417(*)/TRC OUTPUT ADJ control.	Adjust for 0 db reading on MEASURE meter.
(3) T-302(*)/TRC MEASURE switch.	MOD 68 KC IN position.
(4) T-302(*)/TRC INPUT ADJ.	Adjust for 0 db on MEASURE meter for C-band, or plus 2 db on B-band.

3-22. Turnoff Procedure

a. 750V ADJ switch on Power Supply PP-685/TRC.	Position 1.
b. 750V DC switch	OFF.
c. 150V DC switch	OFF.
d. 115V AC switch	OFF.
e. R-417(*)/TRC POWER switch.	OFF.
f. Remove RF filters and replace with dummy filters.	

CHAPTER 4

MAINTENANCE INSTRUCTIONS

Section I. OPERATOR'S MAINTENANCE

4–1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the radio equipment are listed below together with a reference to the paragraph covering the specific maintenance function. The duties assigned require the tools and materials indicated in paragraph 4–2.

a. Daily preventive maintenance checks and services (para 4–5).

b. Weekly preventive maintenance checks and services (para 4–6).

c. Cleaning (para 4–7).

d. Operator's troubleshooting (para 4–8).

e. Repairs and replacements (para 4–9).

4–2. Tools and Materials Required

The tools and materials required for preventive maintenance are listed below.

a. Lint-free cloth.

b. Cleaning Compound (FSN 7930–395–9542).

c. Screwdriver TL–358/U.

d. Stiff bristle brush.

4–3. Operator's Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 4–5 and 4–6 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (paras 4–5 and 4–6) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check, and what the normal conditions are; the *References* column lists the illustrations, paragraphs, or manuals that contain supplementary information. If the defect cannot be remedied by the operator, higher level of maintenance or repair is required. Records and reports of the checks and services must be made in accordance with the requirements set forth in TM 38–750.

4–4. Operator's Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the radio equipment are required on a daily and weekly basis.

a. Paragraph 4–5 specifies checks and services that must be accomplished daily or under the conditions listed below.

(1) When the equipment is initially installed.

(2) When the equipment is reinstalled after removal for any reason.

(3) At least once each week if the equipment is maintained in standby condition.

b. Paragraph 4–6 specifies additional checks and services that must be performed once each week.

4-5. Operator's Daily Preventive Maintenance Checks and Services Chart

Note. The daily preventive maintenance checks and services items may be performed with the radio equipment operating as a radio link in a carrier system. Perform only those items listed in the chart below.

Sequence No.	Item to be inspected	Procedures	References
		***Warning*: Do not clean the equipment if power is ON.**	
1	Exterior surfaces	Clean the exterior surfaces including the panels	Figs. 1-1 through 1-17.
		WARNING RADIATION HAZARD	
		The paint on dials and pointers on the meters of this equipment contain radioactive material. Physical contact with the radioactive material can be seriously injurious to health.	
2	Meter faces	Check to see that meter faces (glass) are not loose or broken	Figs. 1-1 through 1-19.
3	Interconnecting cables and connectors.	Check all interconnecting cables and connectors for cracks and breaks.	None.
4	Knobs and switches	While making the operating check (item 5), observe that the mechanical action of each knob and switch (only those that do not interfere with normal operation) is smooth and free of external or internal binding. Check to see that each knob is secure to its shaft.	Figs. 3-1 through 3-17.
5	Operational check	Operate the equipment on an authorized frequency to verify its capability.	Para 3-8c.

4-6. Operator's Weekly Preventive Maintenance Checks and Services Chart

Note. The weekly preventive maintenance checks and services items may be performed with the radio equipment operating as a radio link in a carrier system. Perform only those items listed in the chart below.

Sequence No.	Item to be inspected	Procedures	References
1	End item equipment	Inspect equipment for completeness	Para 1-6.
2	Nuts and screws	Check the cases and panels to verify that no nuts or screws are missing.	None.
3	Carrying straps	Inspect for mildew, tears, and frays	Figs. 1-1 through 1-17.
4	Guy wires	Tape loose ends of guy wires to taut guy wires	None.
5	Exposed metal surfaces.	Inspect for rust and corrosion	Figs. 1-1 through 1-17.
6	Dzus fasteners	Inspect for loose or missing Dzus fasteners	None.
7	Installation	See that equipment is properly installed	Paras 2-1 through 2-8.

4-7. Cleaning

Inspect the exterior of the equipment. The exterior surfaces must be free of dust, dirt, grease, and fungus.

a. Remove dust and loose dirt with a clean, soft cloth.

***Warning:* Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. Do *not* use near a flame.**

b. Remove grease, fungus, and ground-in dirt from the case; use a cloth dampened (not wet) with cleaning compound (FSN 7930-395-9542).

c. Remove dust or dirt from the connectors with a brush.

d. Clean the front panels and control knobs; use a soft, clean cloth. If dirt is difficult to remove, dampen the cloth with water; use mild soap if necessary.

4-8. Operator's Troubleshooting

a. Visual Inspection. Before operating the equipment make a visual inspection to save repair time and avoid further damage. Inspect the following items for obvious defects:

(1) Cables improperly connected (figs. 2-38, 2-39, 2-40, or 2-41).

(2) Worn, broken, or disconnected cables or plugs.

(3) Burned-out fuses.

(4) Switches or controls improperly set.

b. Troubleshooting Checklists. The troubleshooting checklists will help the operator correct abnormal conditions encountered during the starting procedures (paras 3-4, 3-5, and 3-6), lineup procedures (para 3-8 *a* and *b*), and operating procedures (para 3-8). Only those corrective measures that the operator can accomplish are given. If the corrective measures given do not restore normal equipment performance, troubleshooting by higher level maintenance personnel is required. Note on a repair tag how the equipment performed at the time of failure and the corrective measure taken.

(1) *Troubleshooting checklist* for PP-685(*)/TRC.

Item No.	Symptom	Probable cause	Correction
1	AC VOLTS meter (fig. 3-3) indicates zero and FIL indicator does not illuminate.	Defective PU-286/U	Refer to TM 11-6115-204-10, -20, -35.
		Defective fuses in TF-167/TRC (A, fig. 3-4) or J-532/U (fig. 1-2).	Replace defective fuses (para 4-9*b*).
		Loose or improperly seated connectors on 115V AC INPUT connector (fig. 3-3), 115-230V connector (A, fig. 3-4) or connectors on J-532/U (fig. 1-2).	Check seating of connectors.
		Damaged interconnecting cables or defective 115V AC circuit breaker.	Higher level maintenance required.
2	AC VOLTS meter indicates zero and FIL indicator illuminates.	Defective AC VOLTS meter	Higher level maintenance required.
3	AC VOLTS meter indicates correct voltage and FIL indicator does not illuminate.	Defective lamp in FIL indicator	Replace lamp in FIL indicator (para 4-9*a*).
4	With DC TEST switch in 150 UPPER SCALE:		
	DC VOLTS meter indicates zero and 150V DC indicator does not illuminate.	Defective 150V DC circuit breaker	Higher level maintenance required.
	DC VOLTS meter indicates zero and 150V DC indicator illuminates.	Defective DC VOLTS meter or DC VOLTS meter circuit.	Higher level maintenance required.
	DC VOLTS meter indicates correct voltage and 150V DC indicator does not illuminate.	Defective lamp in 150V DC indicator	Replace lamp in 150V DC indicator (para 4-9*a*).
5	With DC TEST switch in 750 LOWER SCALE:		
	DC VOLTS meter indicates zero and 750V DC indicator does not illuminate.	Defective 750V DC circuit breaker	Higher level maintenance required.
	DC VOLTS meter indicates zero and 750V DC indicator illuminates.	Defective DC VOLTS meter	Higher level maintenance required.
	DC VOLTS meter indicates correct voltage and 750V DC indicator does not illuminate.	Defective lamp in 750V DC indicator	Replace lamp in 750V DC indicator (para 4-9*a*).
6	With DC TEST switch in 275 LOWER SCALE, DC VOLTS meter indicates zero.	Defective DC VOLTS meter circuit	Higher level maintenance required.

(2) *Troubleshooting checklist for T–302(*)/TRC.*

Item No.	Symptom	Probable cause	Correction
1	No indication on MEASURE meter (fig. 3–1) for any setting of MEASURE switch.	Loose or improperly seated connector on POWER SUPPLY connector (fig. 3–1) or TRANSMITTER connector (fig. 3–3).	Check seating of connectors.
		Damaged interconnecting cable or defective MEASURE meter (fig. 3–1).	Higher level maintenance required.
2	FREQ DRIFT meter cannot be adjusted for correct indication with DISCR CENTER control.	Defective FREQ DRIFT meter or FREQ DRIFT meter circuit.	Higher level maintenance required.
3	MEASURE meter cannot be adjusted for correct indication for various positions of MEASURE switch.	Defective circuits	Higher level maintenance required.
4	No indication on TEST meter for any setting of TEST switch.	Defective TEST meter	Higher level maintenance required.
5	TEST meter cannot be adjusted for correct indication when DRIVER TUNE or DRIVER OUTPUT COUPLING controls are adjusted.	Defective circuits in transmitter	Higher level maintenance required.
6	TEST meter cannot be adjusted for correct indication when controls of transmitter tuning head are adjusted.	Transmitter tuning head not seated properly in transmitter.	Check seating of transmitter tuning head.
7	ME–82/U cannot be adjusted for correct indication when controls of transmitter tuning head are adjusted.	Bandpass filter or dummy filter not seated properly in transmitter.	Check seating of bandpass filter or dummy filter.
		Loose or improperly seated connector on ANTENNA jack or ME–82/U.	Check seating of connectors.
		Defective ME–82/U	Replace ME–82/U.
		Defective CG–718/U between ANTENNA jack and ME–82/U.	Replace CG–718/U.
8	LOW PWR ALARM indicator will not illuminate under any condition.	Defective lamp in LOW PWR ALARM indicator.	Replace lamp in LOW PWR ALARM indicator (para 4–9*a*).
9	Buzzer will not sound under any condition.	Defective buzzer or transmitter circuit.	Higher level maintenance required.
10	DRIVER OUTPUT COUPLING control cannot be adjusted for a 35±1 microampere indication on the TEST meter with the TEST switch in PWR AMPL GRID position when using the A-band transmitter tuning head.	INPUT LOADING adjustment of AM–1180/GRC incorrect.	Perform input loading adjustment (para 3–4*b*(1) or 3–5*k*).
11	RF channel number indication on plate tune dial (fig. 3–5) of AM–1180/GRC (A-band) incorrect.	Tracking adjustment of AM–1180/GRC incorrect.	Perform tracking adjustment (para 3–5*k*).

(3) *Troubleshooting checklist for R–417(*)/TRC.*

Item No.	Symptom	Probable cause	Correction
1	POWER indicator does not illuminate when POWER switch is operated to ON.	Defective lamp in POWER indicator.	Replace lamp in POWER indicator (para 4–9*a*).
		Loose or improperly seated connector in AC connector.	Check seating of connector.
		Damaged interconnecting cable or POWER switch.	Higher level maintenance required.
2	MEASURE meter and FREQ DRIFT meter cannot be adjusted for correct indications from receiver tuning head.	Receiver tuning head not seated properly in receiver.	Check seating of receiver tuning head.
3	ALARM indicator does not illuminate under any condition.	Defective lamp in ALARM indicator.	Replace lamp in ALARM indicator (para 4–9*a*).
4	Buzzer does not sound under any condition.	Defective buzzer or receiver circuit	Higher level maintenance required.
5	Order-wire circuit does not operate	Loose or improperly seated connector in TRANSMITTER connector.	Check seating of connector.

4–9. Operator's Repairs and Replacements

Operator's repairs consist of replacement of the indicator lamps (*a* below) and front panel fuses (*b* below).

a. Indicator Lamps.

(1) Unscrew the jewel lens from the indicator.

(2) Unscrew the defective lamp and remove it from the socket.

(3) Screw a new lamp into the lamp socket.

(4) Screw the jewel lens into place.

b. Front Panel Fuses.

(1) Unscrew the fuse cap and remove the defective fuse.

(2) Insert a new fuse of the correct rating into the fuseholder, and screw in the fuse cap.

Section II. ORGANIZATIONAL MAINTENANCE

***Warning 1:* When power is disconnected from the equipment, some capacitors may still retain dangerous voltages. Discharge the capacitors with the test prod (Federal stock No. 6625–510–1841) before working on the equipment.**

Warning 2:* The failure of selenium rectifiers results in the liberation of poisonous fumes and the deposit of poisonous selenium compounds. If the rectifier burns out or arcs over, the odor is strong. Provide adequate ventilation immediately. *Avoid inhaling the fumes and do not handle the damaged rectifier until it has cooled.

4–10. Scope of Organizational Maintenance

a. This section contains instructions covering organizational maintenance for this equipment. It includes instructions for performing preventive and periodic maintenance services, checking equipment performance, and gives the repair functions to be accomplished by the organizational repairman.

b. Organizational maintenance of this equipment includes the following:

(1) Organizational preventive maintenance (para 4–12).

(2) Quarterly preventive maintenance (para 4–13).

(3) Quarterly preventive maintenance checks and services chart (para 4–14).

(4) Organizational troubleshooting procedures (para 4–15).

(5) Troubleshooting chart (para 4–16).

(6) Lubrication (para 4–17).

(7) Preservation (para 4–18).
(8) Repair or replacement (para 4–19).

4–11. Tools, Materials, and Test Equipment Required

a. Tools Supplied With Components. Some tools required for organizational maintenance of the equipment are supplied. These tools and their location in the components are as follows:

Component	Tool	Figure No.
R–417(*)/TRC	Pin straightener (7-pin)	2–42
	Pin straightener (9-pin)	2–42
	Alignment tool	2–42
	No. 2 Allen wrench	2–42
	No. 4 Allen wrench	2–42
	No. 6 Allen wrench	2–42
AM–915(*)/TRC, AM–1178/GRC, and AM–1180/GRC.	Tube puller	4–1
AM–2537/TRA–25	Tube puller	4–2
	No. 6 Allen wrench	4–2
	No. 4 multiple spline wrench.	4–2
	No. 4 multiple spline wrench (modified).	4–2
	No. 6 multiple spline wrench (modified).	4–2
OA–3668A/TRC–24	No. 4 multiple spline wrench.	4–3
	No. 6 multiple spline wrench.	4–3
	No. 10 Allen wrench	4–3
	Tube puller	4–3
	U-shaped tool	4–39
	L-shaped tool	4–39

b. Tools Required.
(1) Tool Equipment TK–115.
(2) Test prod (Federal stock No. 6625–510–1841).

c. Materials Required.
(1) Orangestick.
(2) Lint free cloth.
(3) Sandpaper #000.
(4) Cleaning Compound (Federal stock No. 7930–395–9542).

d. Test Equipment Required.
(1) Multimeter AN/URM–105.
(2) Test Set, Electron Tube TV–7/U or equivalent.

4–12. Organizational Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all categories concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and tests indicate would probably fail before the next scheduled periodic radio equipment at the organizational maintenance level are made at quarterly intervals unless otherwise directed by the commanding officer. The preventive maintenance checks and services should be scheduled concurrently with the periodic service schedule of the other equipment when the radio equipment is used as part of a system.

b. Maintenance forms and records to be used and maintained on this equipment are specified in TM 38–750.

4–13. Organizational Quarterly Preventive Maintenance

Quarterly preventive maintenance checks and services on this equipment are required. Daily and weekly services constitute a part of the quarterly preventive maintenance checks and services and must be performed concurrently. All deficiencies will be recorded in accordance with the requirements of TM 38–750. Perform all the checks and services in the sequence listed in paragraph 4–14.

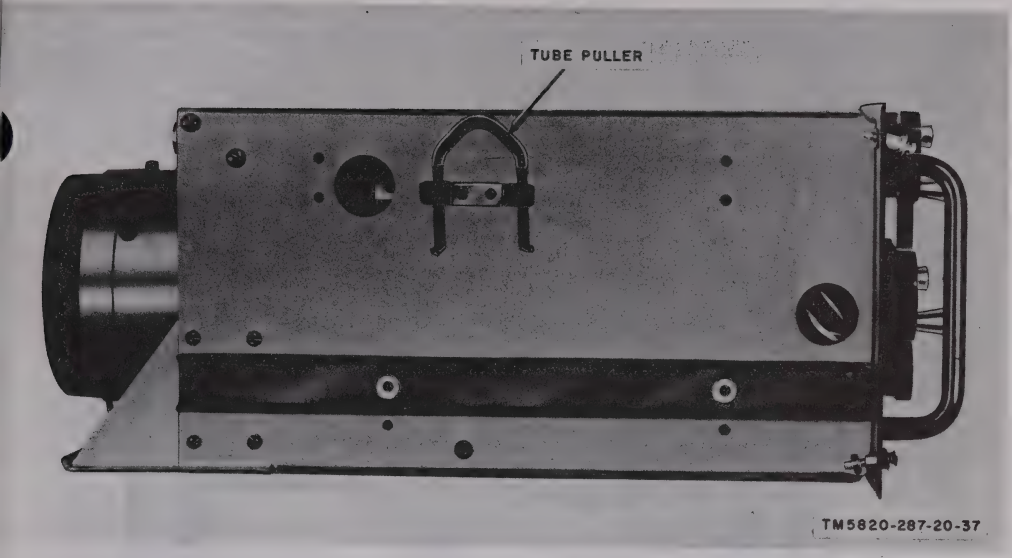


Figure 4–1. AM–915(*)/TRC, AM–1178/GRC, or AM–1180/GRC, side view showing location of tube puller.

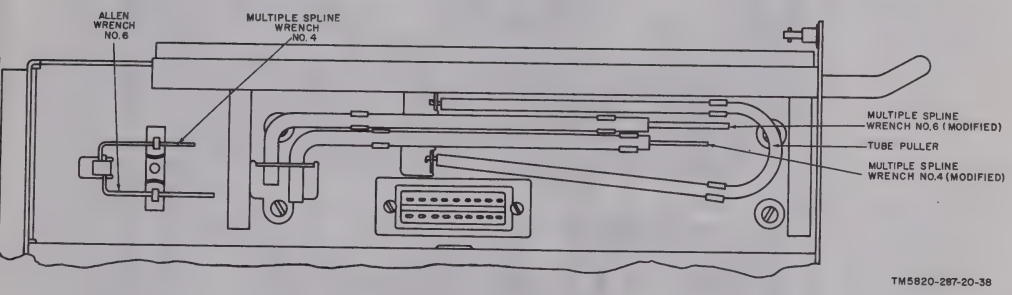


Figure 4–2. AM–2537/TRA–25, side view showing location of tools.

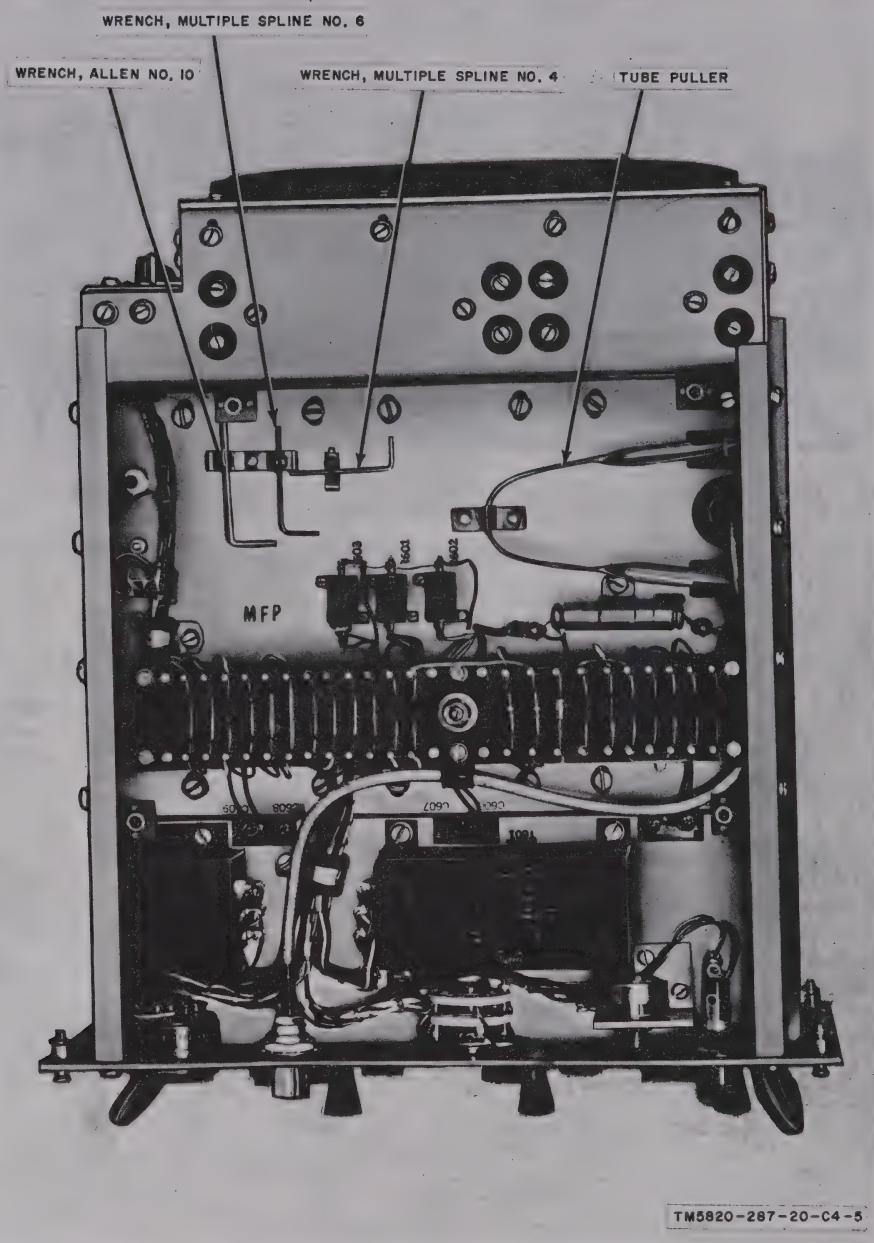


Figure 4-3. AM-3204A/TRC (J-band), location of tools.

-14. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Note. The quarterly preventive maintenance checks and services items are performed only during an authorized owntime. Do not attempt to perform the procedures below when the radio equipment is operating as a radio link in a arrier system.

Sequence No.	Item to be inspected	Procedures	References
1	Publications	See that all publications are complete, serviceable, and current.	DA Pam 310-4.
2	Modifications	Check DA Pam 310-7 to determine if new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	TM 38-750 and DA Pam 310-7.
3	Exterior surfaces	Clean rust and corrosion from metal surfaces. Paint any bare metal spots.	Para 4-18.
4	Antenna	Inspect antenna for bent mast sections, corrosion, and loose fit. Follow para 4-17 instructions when antennas are subjected to salt air exposure.	
5	Interior	*Warning:* **Compressed air is dangerous and can cause serious bodily harm. It can also cause mechanical damage to the equipment. Do not use compressed air to dry parts where cleaning compound has been used.** Remove dust and dirt from the interior of the T-302(*)/TRC, R-417(*)/TRC, and the PP-685(*)/TRC with a clean lint free cloth or soft brush. Use dry compressed air (if available) to remove dust and dirt from inaccessible places.	Para 4-7.
6	Catches, latches, hinges, mountings, and meter glass.	Inspect for breakage, looseness, or other damage.	
7	Variable capacitors	Inspect for dirt, moisture, and loose mountings	Fig. 4-26.
8	Pluckout items	Inspect clamps and seating of pluckout items	Figs. 4-22, 4-24, and 4-32.
9	Gaskets	Inspect for worn or loose parts	None.
10	Blower motors	Inspect for loose or defective bearings by movement of motor shaft.	Fig. 4-23.
11	Resistors, bushings, terminal blocks, and insulators.	Inspect for cracks, chipping, blisterings, moisture, and discoloration.	None.
12	Large capacitors	Inspect for oil leakage, or other types of electrolytic leakage, loose connections, dirt, and insecure mountings.	Fig. 2-42.
[1] 13-M	Lubrication	Lubricate the equipment	Para 4-17.
[2] 14-W	Filters	Remove and clean or replace the filters in R-417(*)/TRC, T-302(*)/TRC, and PP-685(*)/TRC.	Para 4-19 *c* and *f*.
[3] 15-M	Spare parts	Check all spare parts (operator and organizational) for general condition and method of storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.	
		Note. Perform sequence No. 16 through 21 for PP-685(*)/TRC.	
16	PU-286/G No. 1	Operate PU-286/G No. 1. See that output meter indicates 120 volts.	TM 11-6115-204-20.
17	115V AC circuit breaker (PP-685(*)/TRC).	Operate to ON and see that the FIL (amber) indicator glows and AC VOLTS meter indicates approximately 115 volts. Check to see if blower motor in T-302(*)/TRC operates.	Fig. 3-3.
18	INCR OUT switch (TF-167/TRC).	Check AC VOLTS meter for 115 volts ± 5.5 reading of the PP-685(*)/TRC.	Figs. 3-3 and 3-4.
19	150V DC circuit breaker (PP-685(*)/TRC).	Operate to ON, and check to see that DC TEST meter indicates 150 volts and that 150V DC (amber) indicator glows.	Fig. 3-3.

[1] Lubricate at monthly intervals.
[2] Change or clean the filters more frequently (weekly) in desert climates.
[3] Check the spare parts at least once a month.

Sequence No.	Item to be inspected	Procedures	References
20	750V DC circuit breaker (PP–685(*)/TRC).	Operate to ON, and check to see that 750V DC (amber) indicator glows and DC TEST meter indicates 650 volts ±25.	Fig. 3–3.
21	DC TEST switch	Operate switch to following positions and observe indicated readings. *a.* 150 UPPER SCALE. 115 vac ±5.5, 150 vdc. *b.* 750 LOWER SCALE: A-band 115 vac ±5.5, 800 vdc. B-band 115 vac ±5.5, 850 vdc. C-band 115 vac ±5.5, 750 vdc. D-band 115 vac ±5.5, 750 vdc. F-band 115 vac ±5.5, 900 vdc. J-band 115 vac ±5.5, 850 vdc. *c.* 275 LOWER SCALE: A-band 115 vac ±5.5, 275 vdc max. B-band 115 vac ±5.5, 275 vdc max. C-band 115 vac ±5.5, 275 vdc max. D-band 115 vac ±5.5, 275 vdc max. F-band 115 vac ±5.5, 350 vdc. J-band 115 vac ±5.5, 300 vdc. *Note.* Perform sequences No. 22 through 45 for T-302(*)/TRC.	Fig. 3–3.
22	XTAL SEL switch and DISCR CENTER control.	Operate and hold XTAL SEL switch to DISCR CENTER and adjust DISCR CENTER control until FREQ DRIFT indicates zero.	Fig. 3–1, para 3–5.
23	XTAL SEL switch and RF CHANNEL TUNE control.	Operate XTAL SEL switch to DECADE CHANS and rotate RF CHANNEL TUNE control through a few channels and then set to desired RF channel number and maximum indication on MEASURE meter.	Fig. 3–1, para 3–5.
24	INDEX control	Adjust until index pointer of RF CHANNEL TUNE dial is over desired RF channel number.	Fig. 3–1, para 3–5.
25	LOCK control	Turn completely clockwise	Fig. 3–1, para 3–5.
26	XTAL SEL switch and TUNE control.	Operate XTAL SEL switch to UNIT CHANS and rotate TUNE control through a couple of channels and then set to desired RF channel number.	Fig. 3–1, para 3–5.
27	AFC switch	Operate to ON	Fig. 3–1.
28	MEASURE switch	Operate to 1 KC ADJ	Fig. 3–1.
29	1 KC ADJ control	Check for 0-db indication on MEASURE meter	Fig. 3–1, para 3–5.
30	MEASURE switch	Operate to MTR CAL	Fig. 3–1.
31	MTR CAL control	Check for 0-db indication on MEASURE meter	Fig. 3–1, para 3–5.
32	MEASURE switch	Operate to DISCR RF DRIVE	Fig. 3–1.
33	DISCR RF DRIVE control.	Check for 0-db indication on MEASURE meter	Fig. 3–1, para 3–5.
34	MEASURE switch	Operate to MOD ADJ	Fig. 3–1.
35	MOD ADJ control	Check for 0-db indication on MEASURE meter	Fig. 3–1, para 3–5.
36	MTR SENS switch and MOD TRIM control.	Operate and hold MTR SENS switch to INCR and adjust MOD TRIM for maximum indication on MEASURE meter.	Fig. 3–1, para 3–5.
37	1 KC IN	Check 0-db indication (present only when 1-kc test signal is received from carrier terminal equipment).	Fig. 3–1, para 3–5.
38	68 KC IN	Check 0-db indication (present only with 12-channel system)	Fig. 3–1, para 3–5.

Sequence No.	Item to be inspected	Procedures	References
39	MOD 1-KC IN	Present only when 1-kc test signal is received from carrier terminal equipment. A-band +2 db. B-band +2 db. C-band 0 db. D-band 0 db. F-band +2 db. J-band +2 db.	Fig. 3-1, para 3-5.
40	MOD 68 KC IN	Present only with 12-channel system A-band +2 db. B-band 0 db. C-band 0 db. D-band 0 db. F-band +2 db. J-band 2 db.	Fig. 3-1, para 3-5.
41	MOD ADJ control	Check for correct indication on MEASURE meter determined by tuning head. A-band +2 db. B-band +2 db. C-band 0 db. D-band 0 db. F-band +2 db. J-band +2 db.	Fig. 3-1, para 3-5.
42	DC TEST switch (PP-685(*)/TRC).	Operate to 275 LOWER SCALE	Fig. 3-3.
43	SCREEN VOLTS ADJ control (A-, B-, C-, or D-band); 350V control (F-band); or INCR 300V control (J-band, AM-3204A/TRC-24) tuning head.	Check for minimum indication (350 volts, F-band; 300 volts, J-band) on DC VOLTS meter (PP-685(*)/TRC).	Figs. 3-1, 3-3, para 3-5.
44	DC TEST (PP-685(*)/TRC).	Operate to 750 LOWER SCALE	Fig. 3-3.
45	750V ADJ switch	Operate to 1 (A-, B-, C-, D-, and F-band). Operate to 6 (J-band). *Note.* Perform sequence No. 46 through 57 if the AM-1180/GRC (A-band) is installed in the T-302(*)/TRC.	Fig. 3-3, para 3-5.
46	TEST switch (T-302(*)/TRC).	Operate to PWR AMPL GRID	Fig. 3-1.
47	DRIVER TUNE and DRIVER OUTPUT COUPLING controls.	Check for maximum indication on TEST meter *Note.* If TEST meter indicates full scale, check DRIVER OUTPUT COUPLING control for midscale indication.	Fig. 3-1, para 3-5.
48	PLATE TUNE and OUTPUT COUPLING controls (AM-1180/GRC).	Check for maximum indication on ME-82/U	Fig. 3-5, para 3-5.
49	750V ADJ switch PP-685(*)/TRC.	Operate to 5 and check DC TEST meter	Fig. 3-3, para 3-1c.
50	TEST switch (T-302(*)/TRC).	Operate to PWR AMPL CATH	Fig. 3-1.
51	SCREEN VOLTS ADJ. control (AM-1180/GRC).	Check for 21-microampere indication on TEST meter (T-302(*)/TRC).	Figs. 3-1, 3-5, para 3-5.
52	TEST switch (T-302(*)/TRC).	Operate to PWR AMPL GRID	Fig. 3-1.

Sequence No.	Item to be inspected	Procedures	References
53	DRIVER TUNE control.	Check for maximum indication on TEST meter	Fig. 3-1, para 3-5.
54	DRIVER OUTPUT COUPLING control.	Check for more than 25 microamperes indication on TEST meter or until control is completely clockwise.	Fig. 3-1, para 3-5.
55	DRIVER OUTPUT COUPLING control (T-302(*)/TRC).	Adjust until DRIVER OUTPUT COUPLING dial indicates two numbers higher than original setting.	Fig. 3-1, para 3-5.
56	TEST switch	Operate to DRIVER CATH	Fig. 3-1.
57	DRIVER TUNE control.	Check for dip on TEST meter	Fig. 3-1, para 3-5.
		Note: Perform sequence no. 58 through 68 if (B-band) is installed.	
58	TEST switch	Operate to PWR AMPL GRID	Fig. 3-1.
59	GRID control (AM-912(*)/TRC).	Check for maximum indication on TEST meter	Figs. 3-1, 3-6, para 3-5.
60	750V ADJ control (PP-685(*)/TRC).	Operate to 2. See that DC TEST meter indicates 650 ±25	Fig. 3-3, para 3-5.
61	DRIVER TUNE control.	Check for maximum indication on TEST meter	Fig. 3-1, para 3-5.
62	DRIVER OUTPUT COUPLING control.	Check for 20-microampere indication on TEST meter	Fig. 3-1, para 3-5.
63	PLATE and AMPLIFIER OUTPUT COUPLING controls (AM-912(*)/TRC).	Check for maximum indication on ME-82/U	Figs. 3-1, 3-6, para 3-5.
64	DC TEST switch (PP-685(*)/TRC).	Operate 750 LOWER SCALE	Fig. 3-3, para 3-5.
65	750V ADJ switch	Operate to 6. Check DC TEST meter indication of 850 volts ±35 and ME-82/U indication of 70 to 115 watts.	Fig. 3-3, para 3-5.
66	TEST switch (T-302(*)/TRC).	Operate to DRIVER CATH	Fig. 3-1.
67	DRIVER OUTPUT COUPLING control.	Adjust until DRIVER OUTPUT COUPLING dial indicates two numbers higher than original setting.	Fig. 3-1, para 3-5.
68	DRIVER TUNE control.	Check for dip on TEST meter and maximum indication on ME-82/U.	Fig. 3-1, para 3-5.
		Note: Perform sequence no. 69 through 77 if (C-band) is installed.	
69	TEST switch	Operate to MULT GRID	Fig. 3-1.
70	MULTIPLIER GRID control	Check for maximum indication on T-302(*)/TRC TEST meter.	Figs. 3-1, 3-7, para 3-5.
71	DRIVER OUTPUT COUPLING control (T-302(*)/TRC).	Check for 20 microamperes indication on TEST meter	Fig. 3-1.
72	MULTIPLIER OUTPUT COUPLING control (AM-915(*)/TRC).	Operate at two positions higher than original setting	Figs. 3-1, 3-7, para 3-5.
73	TEST switch (T-302(*)/TRC).	Operate to MULT CATH	Fig. 3-1.

Sequence No.	Item to be Inspected	Procedures	References
74	MULTIPLIER PLATE control (AM-915(*)/TRC).	Check for dip on T-302(*)/TRC TEST meter	Figs. 3-1, 3-7, para 3-5.
75	POWER AMPLIFIER GRID, POWER AMPLIFIER PLATE, and AMPLIFIER OUTPUT COUPLING controls.	Check for maximum indication on ME-82/U	Fig. 3-7, para 3-5.
76	DC TEST switch (PP-685(*)/TRC).	Operate to 750 LOWER SCALE	Fig. 3-3.

equence No.	Item to be inspected	Procedures	References
77	750V ADJ switch	Operate to 4. Check for 750 volts ±30 indication on DC TEST meter, and 70 to 115 watts on ME-82/U. *Note.* If the AM-1178/GRC (D-band) is in the T-302(*)/TRC, perform sequence No. 78 through 86.	Fig. 3-3, para 3-5.
78	TEST switch (T-302(*)/TRC).	Operate to MULT GRID	Fig. 3-1.
79	DRIVER TUNE control.	Check for maximum indication on TEST meter	Fig. 3-1, para 3-5.
80	MULTIPLIER control (AM-1178/GRC).	Check for maximum indication on T-302(*)/TRC TEST meter.	Figs. 3-1, 3-8, para 3-5.
81	POWER AMPLIFIER PLATE control	Check for maximum indication on ME-82/U	Fig. 3-8, para 3-5.
82	DC TEST switch (PP-685(*)/TRC).	Operate to 750 LOWER SCALE	Fig. 3-3.
83	750V ADJ control	Operate to 4. Check DC TEST meter for a 750 ± 30 V.	Fig. 3-3, para 3-5.
84	MULTIPLIER PLATE and POWER AMPLIFIER controls (AM-1178/GRC).	Check for maximum indication on ME-82/U	Fig. 3-8, para 3-5.
85	DRIVER OUTPUT COUPLING control (T-302(*)/TRC).	Check for 30- to 45-microampere indication on TEST meter	Fig. 3-1, para 3-5.
86	MULTIPLIER, MULTIPLIER PLATE, POWER AMPLIFIER, and POWER AMPLIFIER PLATE controls (AM-1178/GRC).	Check for maximum indication on ME-82/U *Note.* If AM-2537/TRA-25 (F-band) is installed in T-302(*)/TRC, perform sequence No. 87 through 93.	Fig. 3-8, para 3-5.
87	DC TEST switch (PP-685(*)/TRC).	Operate to 750 LOWER SCALE	Fig. 3-3.
88	750V ADJ switch	Operate to 6. Check DC TEST meter for an indication of 850 volts ±35.	Fig. 3-3, para 3-1c.
89	TEST switch (T-302(*)/TRC).	Operate to MULT CATH	Fig. 3-1.
90	TEST MULT CATH switch (AM-2537/TRA-25).	Operate to MIXER CATH	Fig. 3-10.
91	DRIVER TUNE control (T-302(*)/TRC).	Check for maximum indication on TEST meter	Fig. 3-1, para 3-5.
92	DRIVER OUTPUT COUPLING control.	Check for 30-microampere indication on TEST meter	Fig. 3-1, para 3-5.
93	MIXER TUNING control, MIXER COUPLING control, and POWER AMPLIFIER tuning controls (AM-2537/TRA-25).	Check for maximum indication on ME-82/U *Note.* If AM-3204A/TRC-24 and the 0-902A/TRC-24, 0-903A/TRC-24, or the 0-904A/TRC-24 J-band are installed in T-302(*)/TRC, perform sequence No. 94 through 104.	Fig. 3-9, para 3-5.
94	TEST switch (T-302(*)/TRC).	Operate to MULT CATH. Check for 40-microampere indication on TEST meter (T-302(*)/TRC).	Fig. 3-1, para 3-5.

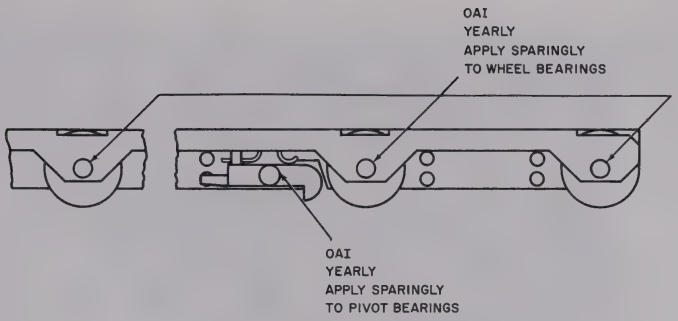
Sequence No.	Item to be inspected	Procedures	References
95	TEST MULT CATH switch (AM–3204A/TRC–24).	Operate to OSC CATH. Check for a TEST meter indication between 14 and 20 microamperes.	Figs. 3–1, 3–10, para 3–5.
96	TEST MULT CATH switch.	Operate to DBLR CATH. Check for TEST meter indication between 12 and 20 microamperes.	Figs. 3–1, 3–1 para 3–5.
97	TEST MULT CATH switch.	Operate to AMPL CATH. Check for TEST meter indication between 16 and 26 microamperes.	Figs. 3–1, 3–10, para 3–5.
98	TEST MULT CATH switch.	Operate to INJECTION DR and adjust INJECTION DRIVE control (0–902A/TRC–24, 0–903A/TRC–124, or 0–904A/TRC–24) for maximum indication on TEST meter (T–302(*)/TRC).	Figs. 3–1, 3–10, 3–11, para 3–5.
99	TEST MULT CATH switch.	Operate to CATH BIAS. Check for TEST meter indication of 42 microamperes.	Figs. 3–1, 3–10, para 3–5.
100	TEST MULT CATH switch.	Operate to MULT CATH. Check for TEST meter indication between 6 and 30 microamperes.	Figs. 3–1, 3–10, para 3–5.
101	TEST MULT CATH switch.	Operate the MIXER CATH and adjust INJECTION MULTIPLIER TUNE and COUPLING controls for maximum indication on TEST meter (T–302(*)/TRC.	Figs. 3–1, 3–10, 3–11, para 3–5.
102	DRIVER OUTPUT COUPLING and DRIVER TUNE controls (T–302(*)/TRC.	Check DRIVER OUTPUT COUPLING and DRIVER TUNE controls for a 30- to 40-microampere indication on TEST meter. ***Caution:*** **When adjusting MIXER COUPLING control, do not exceed a 48 μa indication on the TEST meter. An indication of more than 48 μa will damage the amplifier tube.**	Fig. 3–1, para 3–5.
103	TEST MULT CATH switch (AM–3204A/TRC–24).	Operate to PA CATH and check MIXER TUNE and COUPLING controls for a maximum indication of 25 microamperes on TEST meter (T–302(*)/TRC).	Figs. 3–1, 3–10, para 3–5.
104	INJECTION MULTIPLIER MIXER, and POWER AMPL TUNE and COUPLING controls (AM–3204A/TRC–24).	Check ME–82/U for an indication of 10 watts or more, and TEST meter for 35 to 48 microamperes.	Figs. 3–1, 3–10, para 3–5.
		Note. Perform sequence No. 105 through 118 on the T–302(*)/TRC.	
105	750V DC switch (PP–685(*)/TRC).	Operate to OFF. Check to see that 750V DC extinguishes	Fig. 3–3, para 3–5.
106	ME–82/U	Disconnect CG–718/U from ANTENNA connector of T–302(*)/TRC and connect CG–1030A/U (A-, B-, C-, or D-band), CG–1886/U (F-band, AN/TRA–25), CG–1030A/U (F-band, AN/TRA–25A), or CG–2636/U (J-band) in its place.	Figs. 2–39 through 2–42, para 3–5.
107	TEST switch (T–302(*)/TRC).	Operate to FWD PWR	Fig. 3–1.
108	750V DC switch (PP–685(*)/TRC).	Allow 1-minute delay and operate to ON. Dc indicator should glow.	Fig. 3–3, para 3–5.
109	DRIVER TUNE control (T–302(*)/TRC).	Note indication on TEST meter and check for 70 percent of original indication.	Fig. 3–1, para 3–5.
110	ALARM switch	Operate to NOR	Fig. 3–1.
111	THRESHOLD ADJ control.	Rotate counterclockwise until LOW PWR ALARM indicator glows and buzzer sounds.	Fig. 3–1, para 3–5.
112	DRIVER TUNE control	Check for maximum indication on ME–82/U, and see that LOW PWR ALARM indicator extinguishes and buzzer stops.	Fig. 3–1, para 3–5.
113	ALARM switch	Operate to REV; buzzer should sound	Fig. 3–1, para 3–5.

equence No.	Item to be inspected	Procedures	References
114	DRIVE TUNE control	Repeat procedures given in item 101 above. Check for indicator glow of LOW PWR ALARM, and see that buzzer does not sound.	Fig. 3-1, para 3-5.
115	ALARM switch and DRIVER TUNE control.	Operate ALARM switch to NOR and adjust DRIVER TUNE control for maximum indication on ME-82/U.	Fig. 3-1, para 3-5.
116	AFC switch	Operate to ON	Fig. 3-1.
117	AFC control	Operate to +4 and release. FREQ DRIFT meter should deflect to positive portion of scale and return to 0. Operate to −4 and release. FREQ DRIFT meter deflects to negative portion of scale and returns to zero.	Fig. 3-1, para 3-5.
118	TEST switch	Operate switch to the following positions and observe the meter indications. *a.* OSC MOD PLATE: 12 to 16 μa. *b.* DRIVER GRID: 10 to 16 μa. *c.* DRIVER CATH: 25 μa. *d.* MULT GRID: A-band — Not used. B-band — Not used. C-band — 30 to 40 μa. D-band — 30 to 45 μa. F-band — Not used. J-band — Not used. *e.* MULT CATH: A-band — Not used. B-band — Not used. C-band — 14μa. D-band — 10 to 25 μa. F-band — Refer to 119*a* below. J-band — Refer to 119*b* below. *f.* PWR AMPL GRID: A-band — 20 to 25 μa. B-band — 20 to 25 μa. C-band — 20 to 25 μa. D-band — 1 to 25 μa. F-bank — Not used. J-band — Not used. *g.* PWR AMPL CATH: A-band — 25 μa max. B-band — 25 μa max. C-band — 25 μa max. D-band — 25 μa max. F-band — Not used. J-band — Not used. *h.* FWD PWR: A-band — 30 μa or higher. B-band — 30 μa or higher. C-band — 30 μa or higher. D-band — 30 μa or higher. F-band — 10 μa or higher. J-band — Not used. *i.* REFL PWR: A-band — 10 μa or lower. B-band — 10 μa or lower. C-band — 10 μa or lower. D-band — 10 μa or lower. F-band — 2 μa or lower. J-band — Not used.	Fig. 3-1.

Sequence No.	Item to be inspected	Procedures	References
		Note. If the F-band or J-band tuning heads are installed, perform sequence No. 119 on the T-302(*)/TRC.	
119	TEST MULT CATH switch.	Operate switch to the following positions and observe the meter readings. *a.* F-band: 1ST TRIP CATH..... 14 to 16 μa. DOUB CATH..... 17 to 20 μa. MIXER CATH..... 30 μa. PA CATH..... 35 to 45 μa. REC XTAL CUR..... 10 μa. *b.* J-band: B+ VOLTS..... 38 to 42 μa. OSC CATH..... 14 to 20 μa. DBLR CATH..... 12 to 20 μa. AMPL CATH..... 16 to 26 μa. INJECTION DR..... 20 to 30 μa. CATH BIAS..... 36 to 44 μa. MULT CATH..... 6 to 30 μa. MIXER CATH..... 15 to 48 μa. PA CATH..... 35 to 48 μa. *Note.* Perform sequence No. 120 through 130 for the R-417(*)/TRC.	Figs. 3-1, 3-9. Figs. 3-1, 3-10.
120	POWER circuit breaker	Operate to ON and allow 10 minutes warmup time. Power Indicator should glow.	Fig. 3-2, para 3-6.
121	MEASURE switch	Operate to MTR CAL	Fig. 3-2.
122	MEASURE switch (T-302(*)/TRC).	Operate to 1 KC ADJ, and check MEASURE meter R-417 (*)/TRC for 0 db ±.5 reading.	Fig. 3-1, para 3-6.
123	MEASURE switch (R-417(*)/TRC).	Operate to OSC. Meter should indicate 10μ a or higher (A-, B-, C-, D-, or F-band), and between 10 and 3 μa (J-band).	Fig. 3-2, para 3-6.
124	MEASURE switch	Operate to MIX (B-, C-, F-, or J-band only). MEASURE meter indicates 10 μa or higher (B-, C-, F-band), and between 10 and 30 μa (J-band).	Fig. 3-2, para 3-6.
125	MEASURE switch	Operate to 1ST LIM. MEASURE meter indicates 3 μa (A-, C-, D-, or F-band), and 10 μa for J-band.	Fig. 3-2, para 3-6.
126	MEASURE switch	Operate to 2ND LIM. MEASURE meter indicates 10 μa or higher.	Fig. 3-2, para 3-6.
127	MEASURE switch	Operate to AFC BAL	
128	AFC-CAL switch	Operate and hold to AFC. MEASURE meter should indicate less than 2 μa. Release switch.	Fig. 3-2, para 3-6.
129	MEASURE switch	Operate to B+ position. MEASURE meter should indicate +29 to +30 ua.	Fig. 3-2, para 3-6.
130	MEASURE switch	Operate to 2ND LIM	Fig. 3-2.
		Note. If AM-1179/GRC (A-band) or AM-913/TRC (B-band) is installed in the R-417(*)/TRC, perform sequence No. 131 through 135.	
131	SQUELCH control (R-417(*)/TRC).	Check MEASURE meter for 5 μa indication, and ALARM indicator for glow and buzzer sound.	Fig. 3-2, para 3-6.
132	ALARM switch	Operate to REV	
133	AFC-OFF-CAL switch	Operate and hold to CAL	
134	Tuning control (AM-1179/GRC or AM-913/TRC).	MEASURE meter indicates maximum, FREQ DRIFT meter indicates 0, and buzzer sounds. When AFC-OFF-CAL switch is released, buzzer no longer sounds.	Figs. 3-2, 3-12, para 3-6.
135	INDEX control	Adjust until index line is over red calibration mark nearest desired RF channel number.	Fig. 3-12, para 3-6.

Sequence No.	Item to be inspected	Procedures	References
		Note. Perform sequence No. 136 through 142 if the AM-914/TRC (C-band) is installed in R-417(*)/TRC.	
136	SQUELCH control (R-417(*)/TRC).	MEASURE meter indicates 5 μa, ALARM indicator glows, and buzzer sounds when squelch control is fully ccw.	Fig. 3-2, para 3-6.
137	Tuning control (AM-914/TRC).	Check for maximum meter indication	Fig. 3-13, para 3-6.
138	SQUELCH control (R-417(*)/TRC).	Check to see that MEASURE meter indication does not exceed 30 μa with squelch control fully cw.	Fig. 3-2, para 3-6.
139	AFC-OFF-CAL switch	Operate and hold to CAL	Fig. 3-2.
140	FINE control (AM-914/TRC).	Check MEASURE meter for maximum indication and FREQ DRIFT meter for zero indication.	Figs. 3-2, 3-13, para 3-6.
141	INDEX control	Adjust until index line is over red calibration line nearest desired RF channel number on OSC dial.	Fig. 3-13, para 3-6.
142	Tuning control	Adjust until desired RF channel number is directly under index line of RF AMP dial.	Fig. 3-13 para 3-6.
		Note. Perform sequence No. 143 through 150 if the AM-1177/GRC (D-band) is installed in the (R-417(*)/TRC).	
143	AFC-OFF-CAL switch (R-417(*)/TRC).	Operate and hold to CAL	Fig. 3-2 para 3-6.
144	Oscillator tuning control (AM-1177/GRC).	Check for 0 indication on FREQ DRIFT meter	Figs. 3-2, 3-14, para 3-6.
145	RF amplifier tuning control.	Check MEASURE meter for maximum indication	
146	FINE TUNE control	Check MEASURE meter for maximum indication	Fig. 3-14, para 3-6.
147	Oscillator tuning control	Adjust until desired RF channel number is under index line of OSC dial.	Fig. 3-14, para 3-6.
148	RF amplifier tuning control.	Adjust until desired RF channel number is under index line of RF AMP dial.	Fig. 3-14, para 3-6.
149	FINE TUNE control	Check for maximum indication on MEASURE meter	Figs. 3-2, 3-14, para 3-6.
150	RF amplifier tuning control.	Check for maximum indication on MEASURE meter	Figs. 3-2, 3-14, para 3-6.
		Note. Perform sequence No. 151 through 153 on AM-913/TRC installed in the R-417(*)/TRC.	
151	Items 121 through 125	Perform procedures in items 121 through 125 for the AM-913/TRC.	
152	Mixer turning dial (CV-932/TRA-25).	Check MEASURE meter for maximum indication	Figs. 3-2, 3-15, para 3-6.
153	Antenna tuning dial	Check for maximum indication on MEASURE meter	Figs. 3-2, 3-15, para 3-6.
		Note. Perform sequence No. 154 through 167 if AM-3203A/TRC-24 and the F-691/TRC-24 (J-band) are installed in the R-417(*)/TRC.	
154	SQUELCH control (R-417(*)/TRC).	Check for MEASURE meter indication of 5 μ a, ALARM indicator glows, and buzzer sounds.	Fig. 3-2, para 3-6.
155	ALARM switch (R-417 (*)/TRC).	Operate to REV	Fig. 3-2.
156	CALIBRATE pushbutton switch (AM-3203A/TRC-24).	Depress and hold	Fig. 3-16.
157	OSCILLATOR control (AM-3203A/TRC-24).	Check for MEASURE meter maximum indication, FREQ DRIFT 0 indication, and buzzer sound. When CALIBRATE switch is released, buzzer no longer sounds.	Figs. 3-2, 3-16, para 3-6.
158	ALARM switch (R-417 (*)/TRC).	Operate to NOR	Fig. 3-2.

Sequence No.	Item to be inspected	Procedures	References
159	INDEX control (AM-3203A/TRC-24).	Adjust until index line of OSCILLATOR dial is directly over red calibration mark nearest desired RF channel number.	Fig. 3-16, para 3-6.
160	OSCILLATOR control (AM-3203A/TRC-24).	Adjust until desired RF channel number is under index line of OSCILLATOR dial.	Fig. 3-16, para 3-6.
161	ANTENNA connector (R-417(*)/TRC).	Disconnect CG-1031/U from ANTENNA connector and connect receiving antenna cable (CG-2636/U) to ANTENNA connector.	Fig. 3-2, para 3-6.
162	AFC-OFF-CAL switch (R-417(*)/TRC).	Operate to AFC	Fig. 3-2.
163	MEASURE switch (R-417(*)/TRC).	Operate to SIG LEV	Fig. 3-2.
164	PRESELECTOR control (AM-3203A/TRC-24).	Check MEASURE meter for maximum indication (R-417(*)/TRC).	Figs. 3-2, 3-16, para 3-6.
165	Tuning control (F-691/TRC-24).	Check for maximum indication on MEASURE meter	Figs. 3-2, 3-17, para 3-6.
166	Handset H-90/U	Check for presence of signal	Fig. 3-2, para 3-6.
167	ANTENNA connector (R-417(*)/TRC).	Disconnect cable from ANTENNA connector and connect CG-718/U and ME-82/U to ANTENNA connector.	Fig. 3-2, para 3-6.
		Note. Perform sequence No. 168 through 180 on the R-417(*)/TRC.	
168	ANTENNA connector	Disconnect the CG-1031/U from the ANTENNA connector and connect the CG-718/U and the ME-82/U in its place.	Figs. 2-38, 2-39, 2-40, or 2-41 and 3-2, para 3-6.
169	ALARM switch	Operate to NOR	Fig. 3-2.
170	SQUELCH control	Rotate counterclockwise and see that ALARM indicator glows and buzzer sounds.	Fig. 3-2.
171	ALARM switch	Operate to REV	Fig. 3-2.
172	AFC-OFF-CAL switch	Operate to AFC	Fig. 3-2.
173	ANTENNA connector	Disconnect CG-718/U from ANTENNA connector and connect CG-1030/U (CG-1886/U, F-band, AN/TRA-25) only (CG-1030A/U, F-band, AN/TRA-25A) in its place.	Figs. 2-38, 2-39, 2-40, or 2-41 and 3-2, para 3-6.
174	ALARM switch	Operate to NOR when buzzing indicates presence of signal	Fig. 3-2, para 3-6.
175	MEASURE switch	Operate to SIG LEV and check MEASURE meter indication of 20 to 37 ua.	Fig. 3-2, para 3-6.
176	MEASURE switch	Operate to 1 KC OUT (4-channel carrier system) or 68 KC OUT (12-channel carrier system). Check MEASURE meter indication of 0 db ± 5.	Fig. 3-2, para 3-6.
177	TALK-RING switch	Operate to RING; RING indicator should glow and buzzer sound.	Fig. 3-2, para 3-6.
178	MEASURE switch	Operate to 1 KC OUT	Fig. 3-2.
179	H-90/U	Talk into microphone section and see that MEASURE meter on R-417(*)/TRC indicates transmission.	Fig. 3-2, para 3-6.
180	H-90/U	Listen to headphone section, and see that order-wire signals are received.	Fig. 3-2, para 3-6.
181		Perform stopping procedures	Para 3-10.

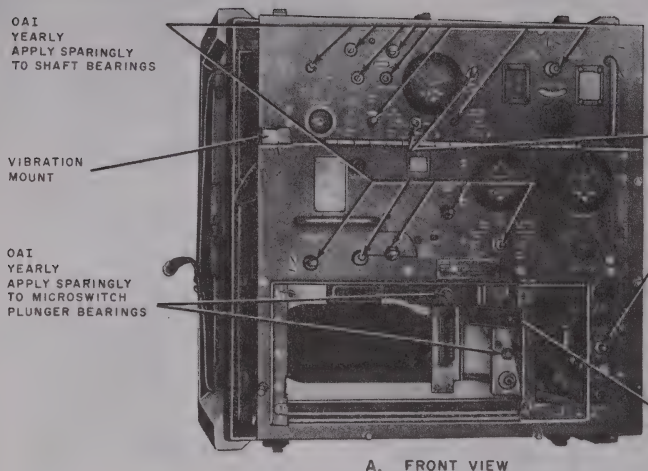


A. LUBRICATION POINTS

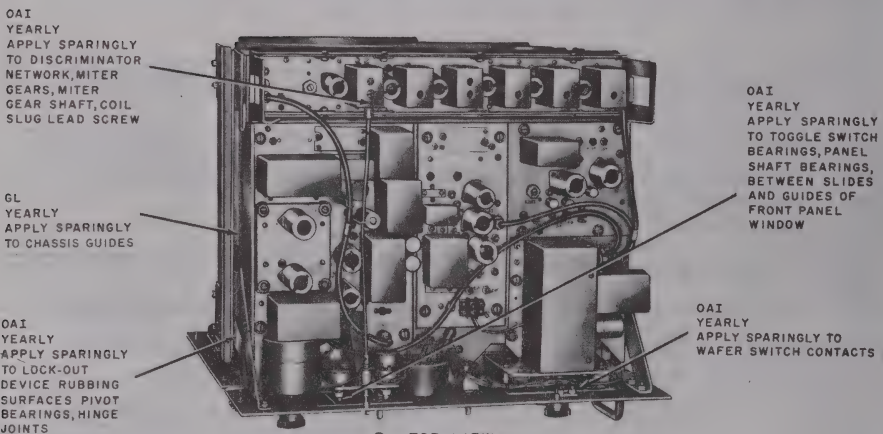
LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

B. LUBRICANT TABLE TM5820-287-20-41

Figure 4–4. Drawer slide assembly, lubrication points.



A. FRONT VIEW



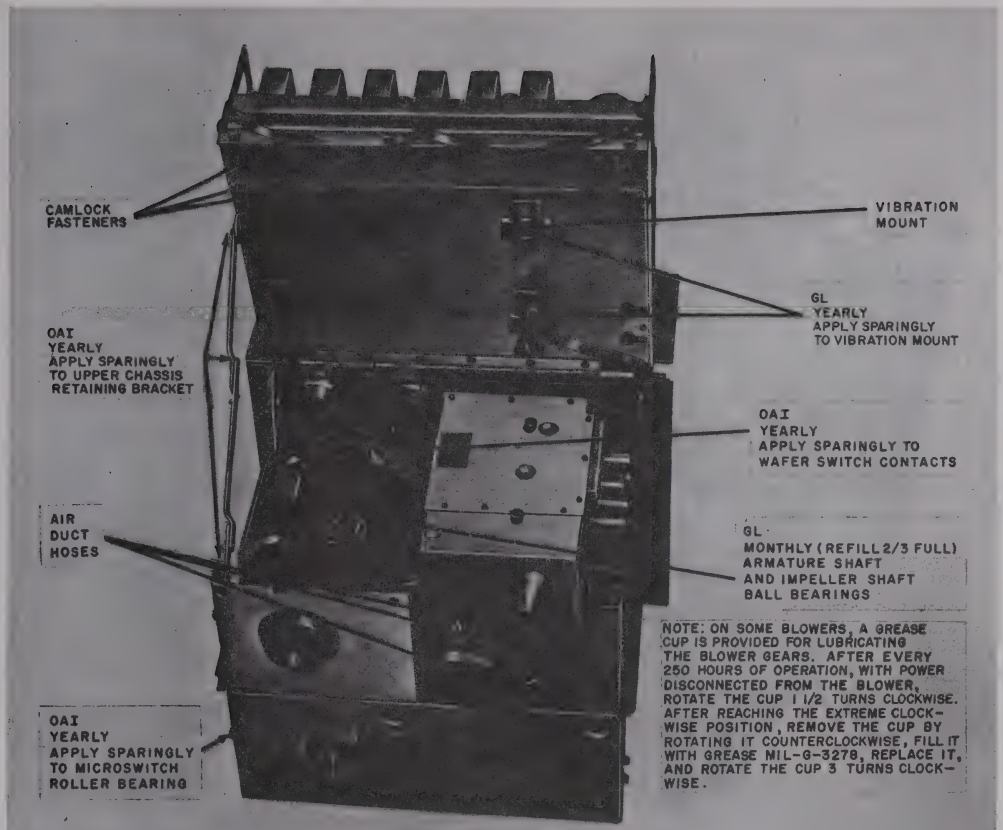
B. TOP VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

C. LUBRICANT TABLE

TM5820-287-20-42

Figure 4-5. T-302(*)/TRC, front panel controls and upper chassis, lubrication points.

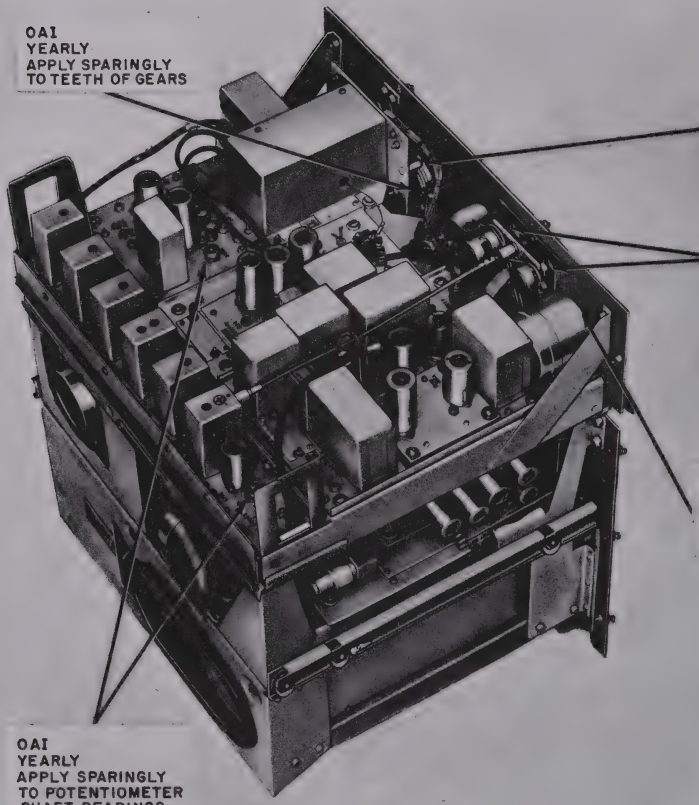

CAMLOCK FASTENERS
VIBRATION MOUNT
GL YEARLY APPLY SPARINGLY TO VIBRATION MOUNT
OAI YEARLY APPLY SPARINGLY TO UPPER CHASSIS RETAINING BRACKET
OAI YEARLY APPLY SPARINGLY TO WAFER SWITCH CONTACTS
AIR DUCT HOSES
GL MONTHLY (REFILL 2/3 FULL) ARMATURE SHAFT AND IMPELLER SHAFT BALL BEARINGS
NOTE: ON SOME BLOWERS, A GREASE CUP IS PROVIDED FOR LUBRICATING THE BLOWER GEARS. AFTER EVERY 250 HOURS OF OPERATION, WITH POWER DISCONNECTED FROM THE BLOWER, ROTATE THE CUP 1 1/2 TURNS CLOCKWISE. AFTER REACHING THE EXTREME CLOCKWISE POSITION, REMOVE THE CUP BY ROTATING IT COUNTERCLOCKWISE, FILL IT WITH GREASE MIL-G-3278, REPLACE IT, AND ROTATE THE CUP 3 TURNS CLOCKWISE.
OAI YEARLY APPLY SPARINGLY TO MICROSWITCH ROLLER BEARING
A. TOP VIEW OF LOWER CHASSIS

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

B. LUBRICANT TABLE

TM5820-287-20-43

Figure 4-6. T-302(*)/TRC, lower chassis, lubrication points.



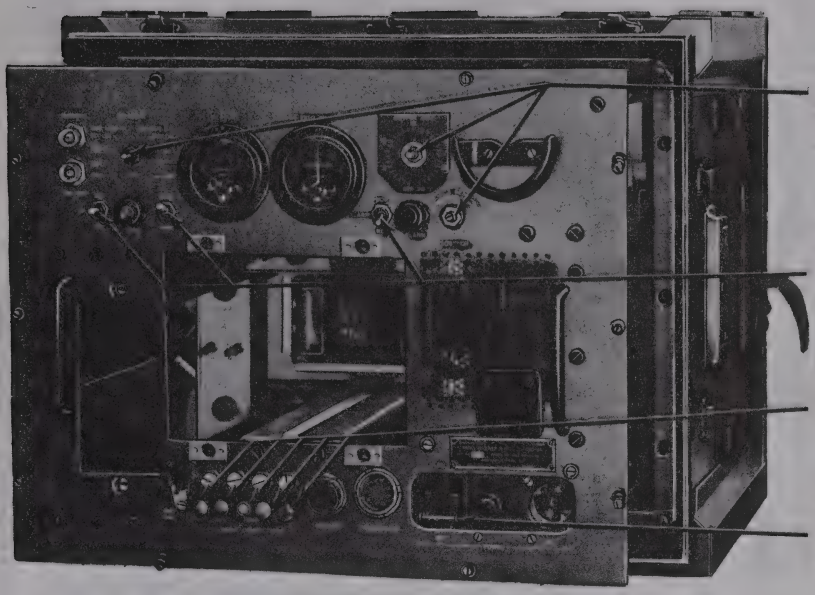
A. TOP VIEW OF PULSED OSCILLATOR ASSEMBLY

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT ML-L-6085A	OAI	9150-257-5449

B. LUBRICANT TABLE

TM5820-287-20-75

Figure 4-7. T-302(*)/TRC, pulse oscillator assembly, lubrication points.



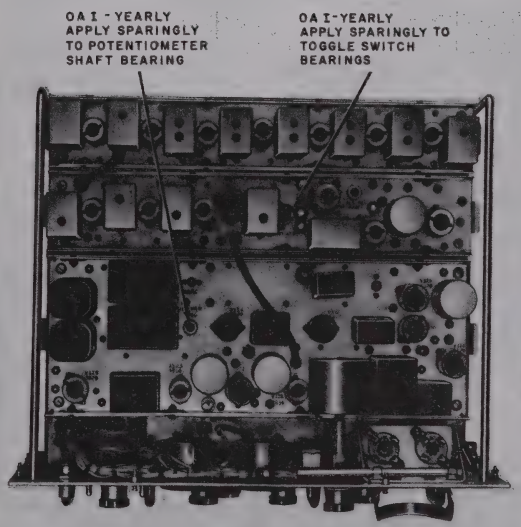
A. FRONT VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NUMBER
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

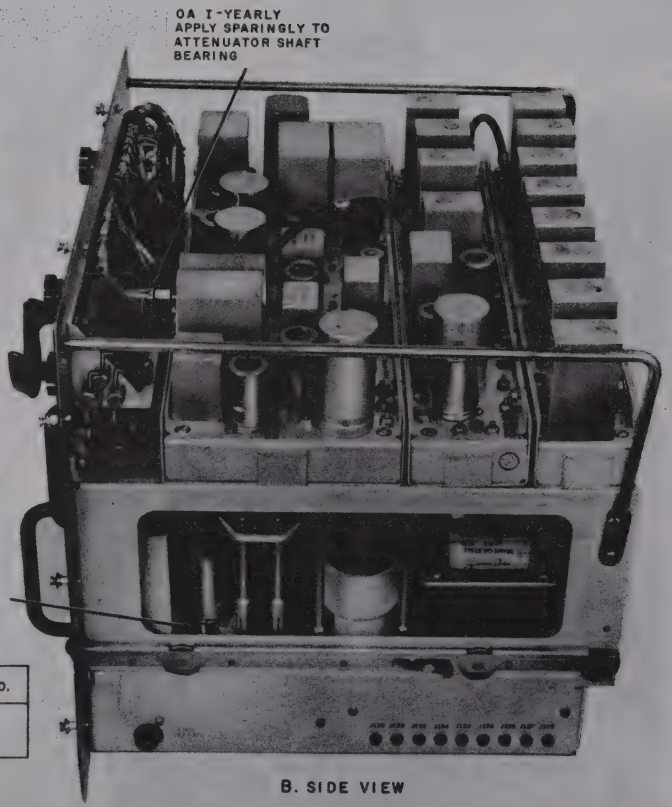
B. LUBRICANT TABLE

TM5820-287-20-44

Figure 4-8. R-417(*)/TRC, front panel controls, lubrication points.



A. TOP VIEW



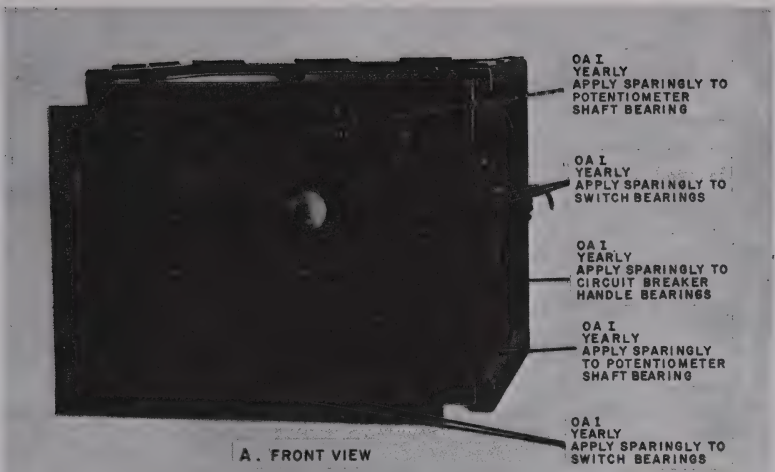
B. SIDE VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OA I	9150-257-5449

C. LUBRICANT TABLE

TM5820-287-20-45

Figure 4–9. R–417(*)/TRC, upper and lower chassis, lubrication points.

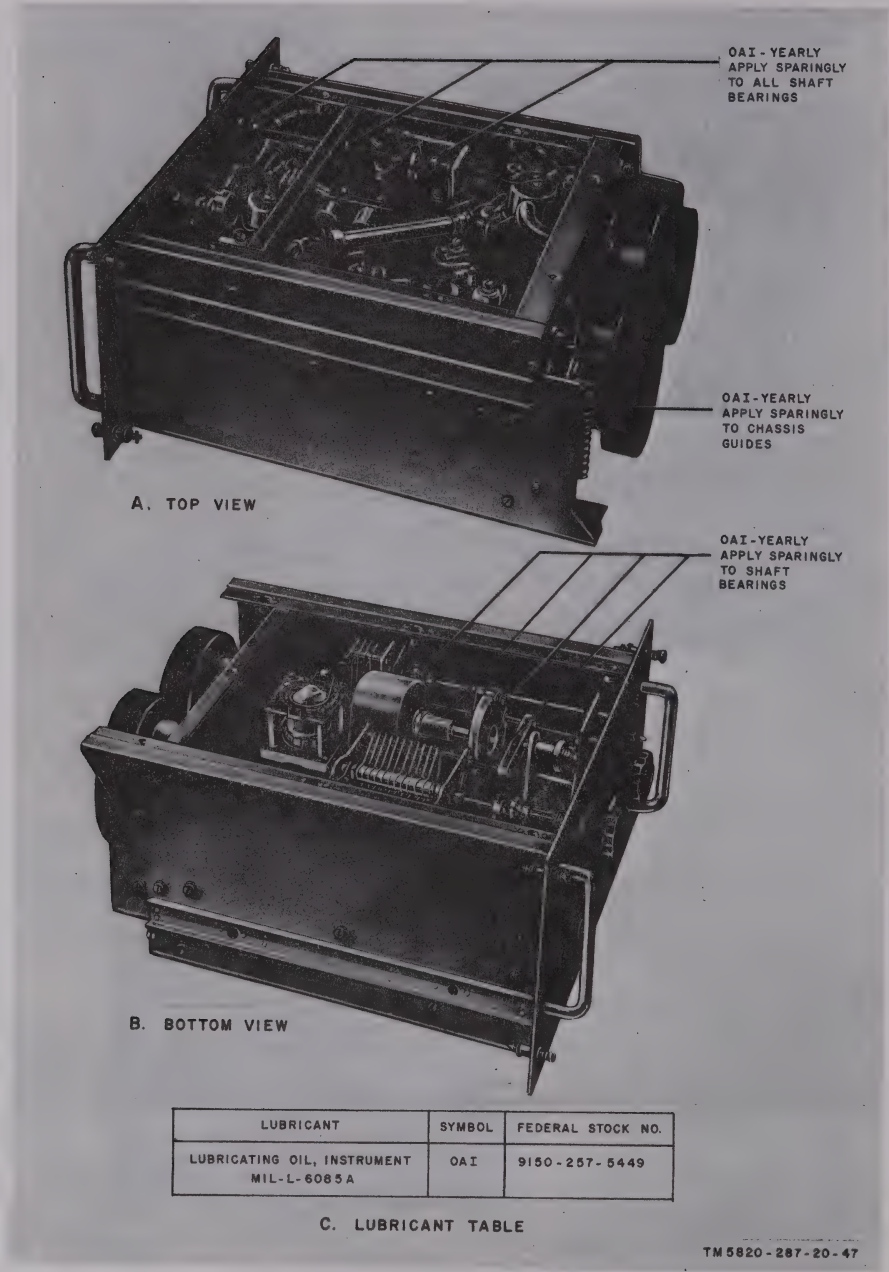


LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OA I	9150-257-5449

B. LUBRICANT TABLE

TM5820-287-20-46

Figure 4–10. PP–685(*)/TRC, lubrication points.

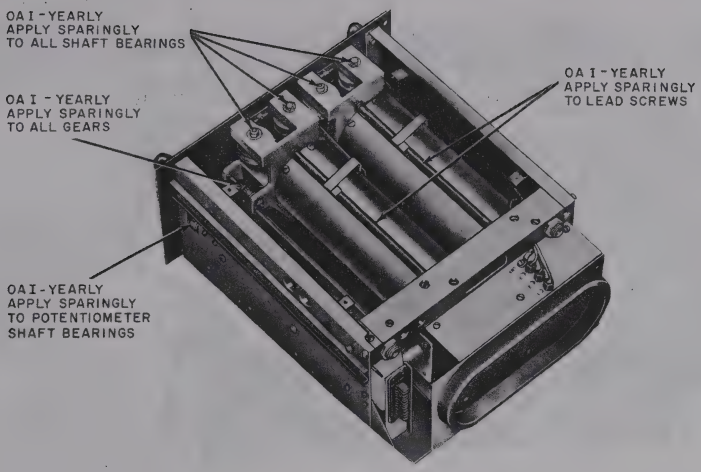

OAI - YEARLY APPLY SPARINGLY TO ALL SHAFT BEARINGS
OAI-YEARLY APPLY SPARINGLY TO CHASSIS GUIDES
A. TOP VIEW
OAI-YEARLY APPLY SPARINGLY TO SHAFT BEARINGS
B. BOTTOM VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

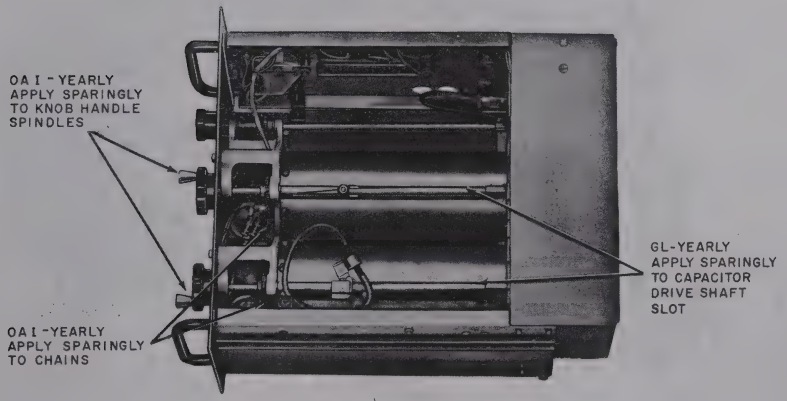
C. LUBRICANT TABLE

TM5820-287-20-47

Figure 4-11. AM-1180/GRC (A-band), lubrication points.



A. TOP VIEW



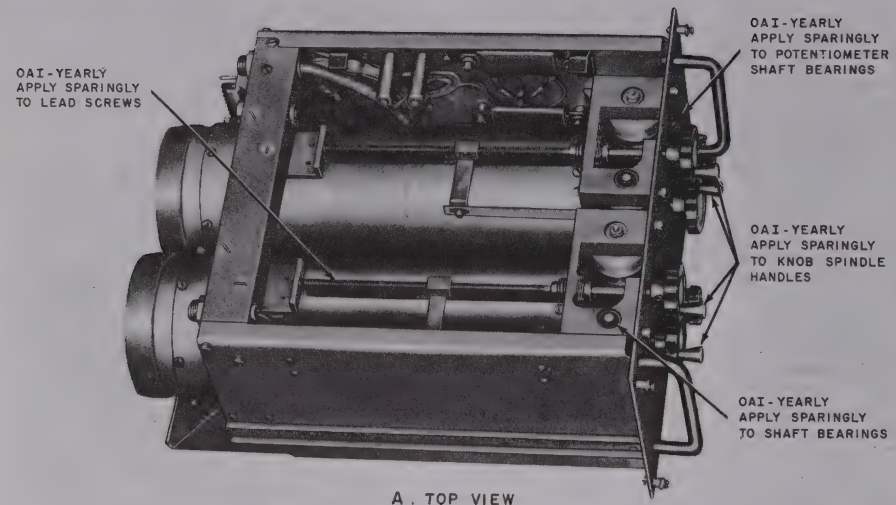
B. BOTTOM VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OA I	9150-257-5449
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

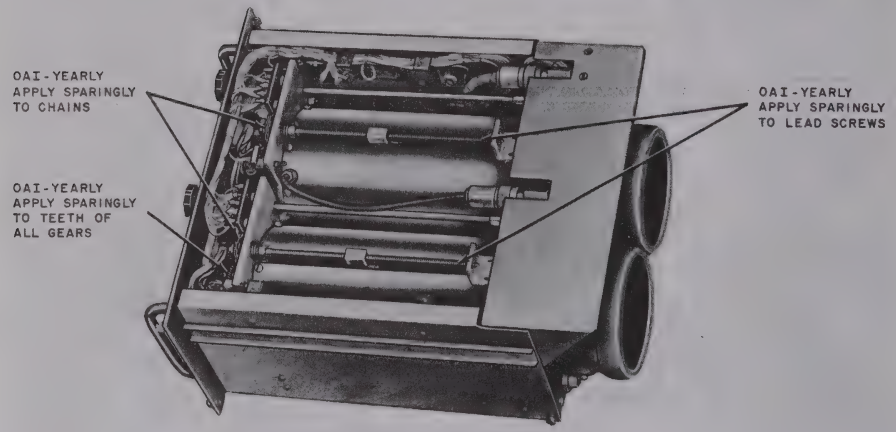
C. LUBRICANT TABLE

TM5820-287-20-48

Figure 4-12. AM-912(*)/TRC (B-band), lubrication points.



A. TOP VIEW



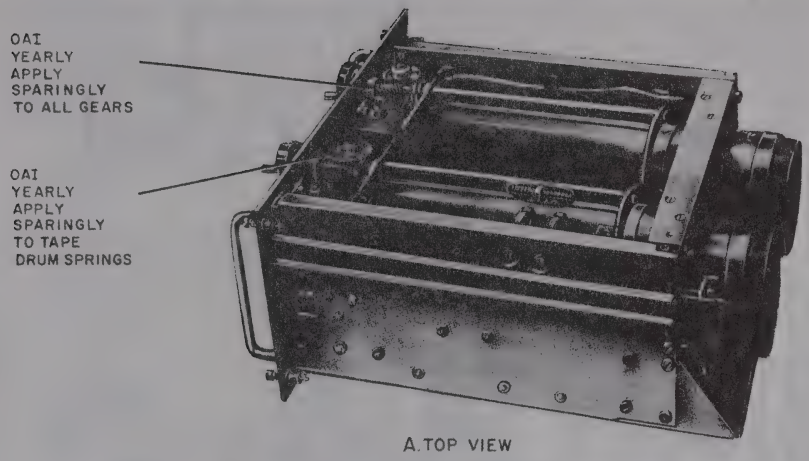
B. BOTTOM VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

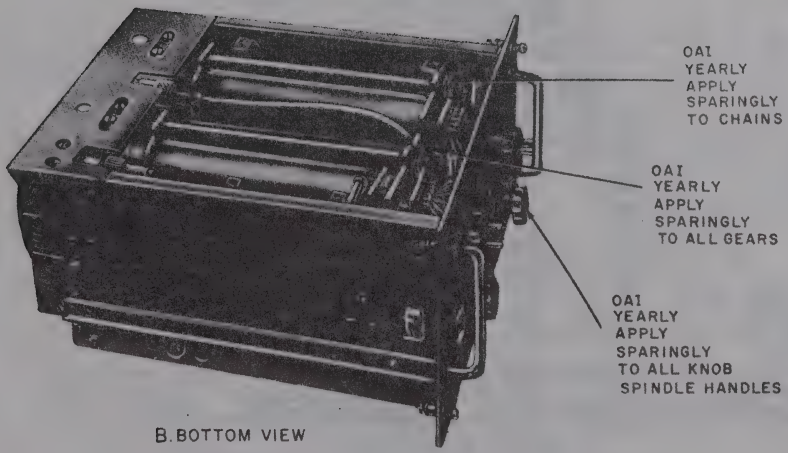
C. LUBRICANT TABLE

TM5820-287-20-49

Figure 4-13. AM-915(*)/TRC (C-band), lubrication points.



A. TOP VIEW



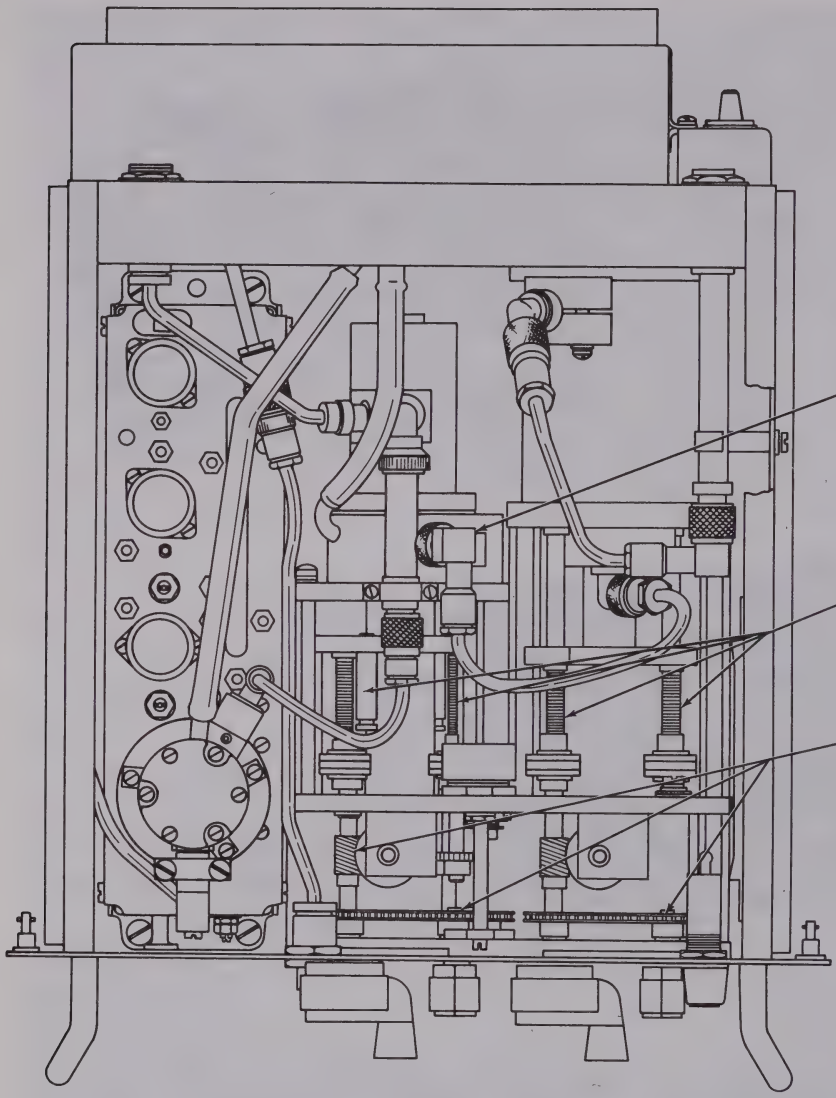
B. BOTTOM VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

C. LUBRICANT TABLE

TM5820-287-20-50

Figure 4-14. AM-1178/GRC (D-band), lubrication points.



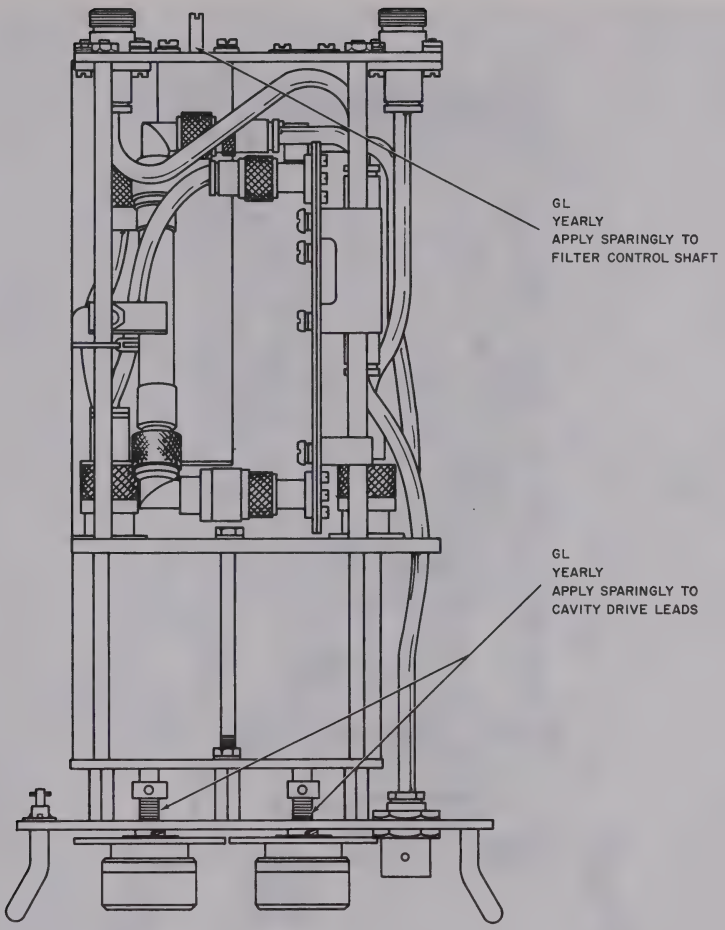
A. TOP VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

B. LUBRICANT TABLE

TM5820-287-20-51

Figure 4-15. AM-2537/TRA-25 (F-band), lubrication points.



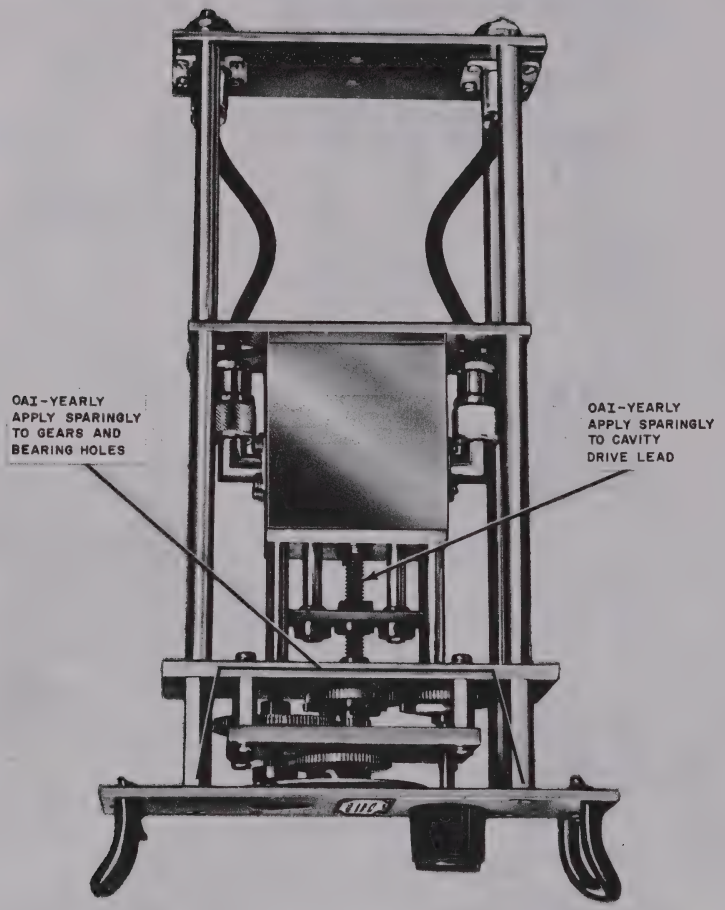
A. TOP VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

TM5820-287-20-52

B. LUBRICANT TABLE

Figure 4-16. CV-932/TRA-25 (F-band), lubrication points.



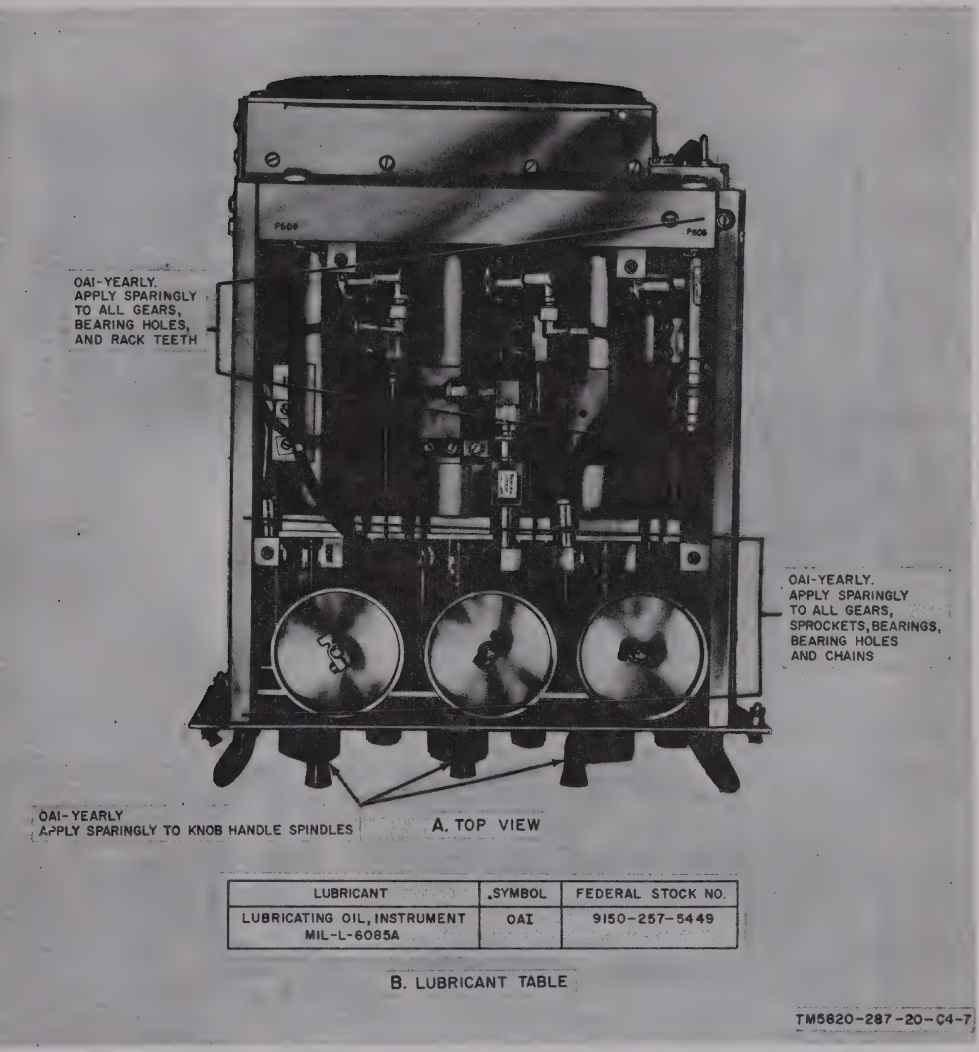
A. TOP VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

B. LUBRICANT TABLE

TM5820-287-20-C4-9

Figure 4-17. F-691/TRC-24 (J-band), lubrication points.

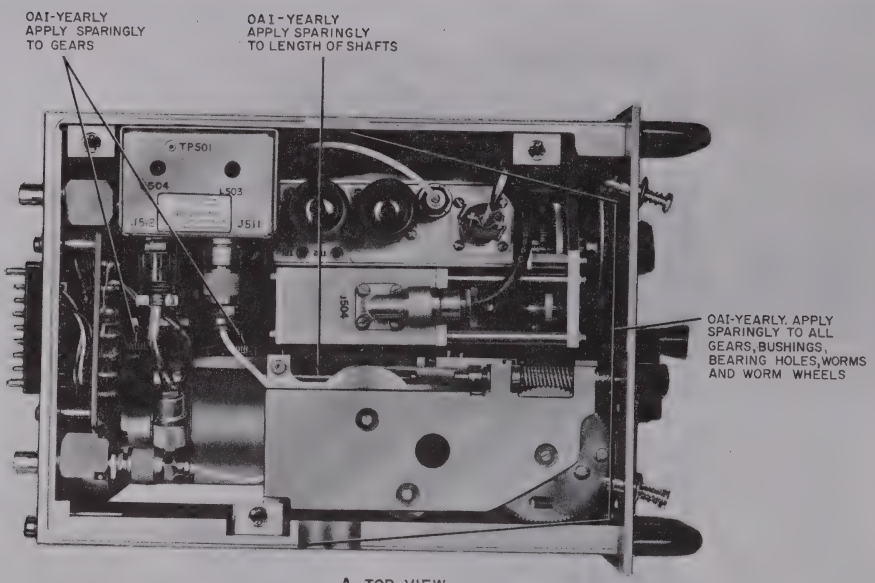


LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

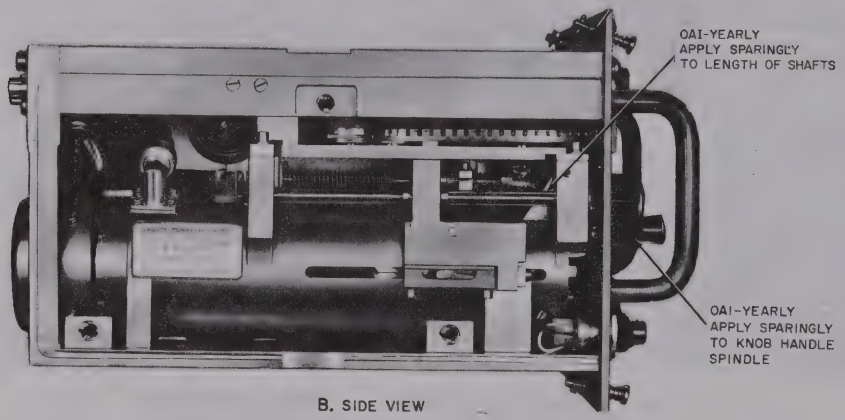
B. LUBRICANT TABLE

TM5820-287-20-C4-7

Figure 4-18. AM-3204A/TRC-24 (J-band), lubrication points.



A. TOP VIEW



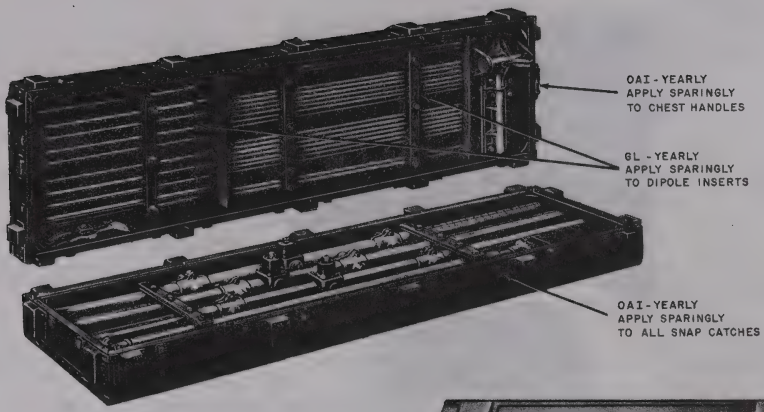
B. SIDE VIEW

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449

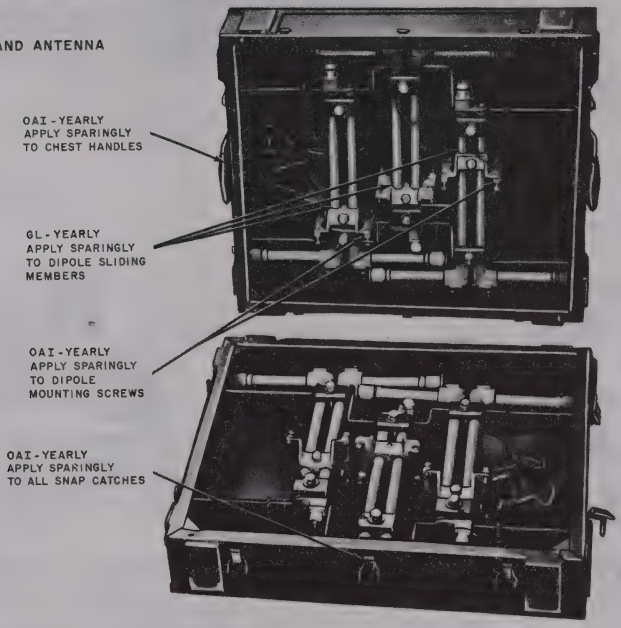
C. LUBRICANT TABLE

TM5820-287-20-C4-8

Figure 4-19. AM-3203A/TRC-24 (J-band), lubrication points.



A. A-BAND ANTENNA



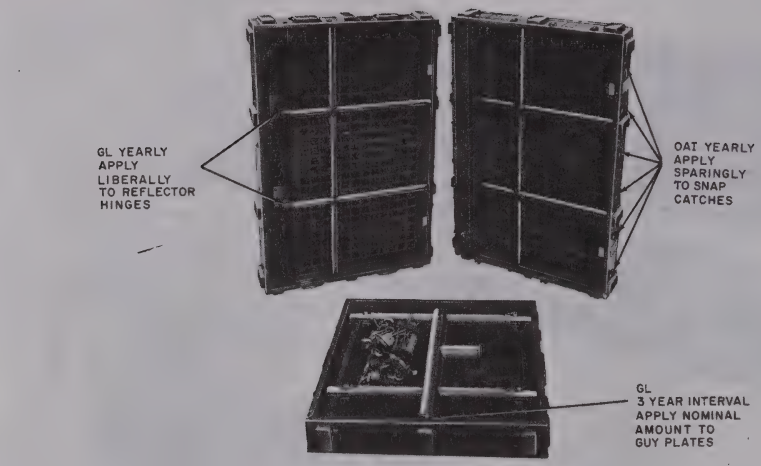
B. B, C, OR D BAND ANTENNA

LUBRICANT	SYMBOL	FEDERAL STOCK NO.
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

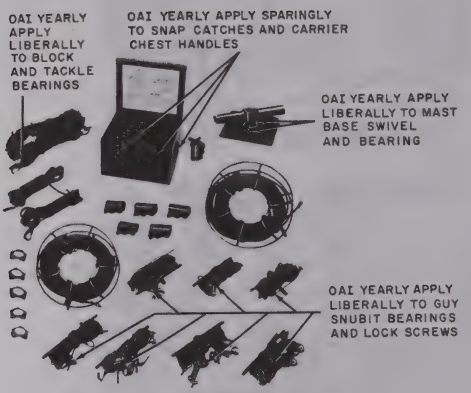
C. LUBRICANT TABLE

TM5820-287-20-53

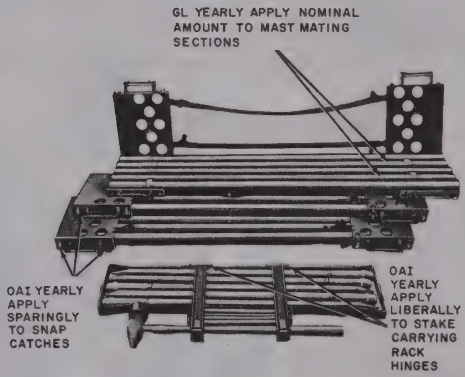
Figure 4-20. A-, B-, C-, or D-band antenna, lubrication points.


GL YEARLY APPLY LIBERALLY TO REFLECTOR HINGES
OAI YEARLY APPLY SPARINGLY TO SNAP CATCHES
GL 3 YEAR INTERVAL APPLY NOMINAL AMOUNT TO GUY PLATES

A. SUPPORT AND REFLECTORS


OAI YEARLY APPLY LIBERALLY TO BLOCK AND TACKLE BEARINGS
OAI YEARLY APPLY SPARINGLY TO SNAP CATCHES AND CARRIER CHEST HANDLES
OAI YEARLY APPLY LIBERALLY TO MAST BASE SWIVEL AND BEARING
OAI YEARLY APPLY LIBERALLY TO GUY SNUBIT BEARINGS AND LOCK SCREWS

B. GUYING EQUIPMENTS


GL YEARLY APPLY NOMINAL AMOUNT TO MAST MATING SECTIONS
OAI YEARLY APPLY SPARINGLY TO SNAP CATCHES
OAI YEARLY APPLY LIBERALLY TO STAKE CARRYING RACK HINGES

C. MASTS AND GUY STAKES

LUBRICANT	SYMBOL	FEDERAL STOCK NUMBER
LUBRICATING OIL, INSTRUMENT MIL-L-6085A	OAI	9150-257-5449
GREASE, AIRCRAFT AND INSTRUMENT MIL-G-3278	GL	9150-261-8297

D. LUBRICANT TABLE

TM5820-287-20-54

Figure 4-21. Antenna support parts, lubrication points.

4–15. Organizational Troubleshooting Procedures

Troubleshooting of this equipment is based on the quarterly preventive maintenance checks and services chart. To troubleshoot the equipment, perform all functions starting with item number 16 in the quarterly preventive maintenance checks and services chart (para 4–14) and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the item number and turn to the corresponding item number in the troubleshooting chart (para 4–16). Perform the checks and corrective measures indicated in the troubleshooting chart. If the corrective measures indicated do not result in correction of the trouble, higher level of maintenance is required.

4–16. Troubleshooting Chart

Item	Symptom	Probable cause	Corrective measure
16	Output meter indicates zero		Refer to TM 11–6115–204–20.
17	AC VOLTS meter indicates zero and FIL (amber) indicator does not glow.	Defective fuse	Replace defective fuse in TF–167/TRC.
		Defective lamp in FIL indicator	Replace defective FIL lamp.
		Defective fuse F5 (fig. 4–22)	Replace defective fuse F5.
			Check and repair cables from PU–286/G No. 1 to PP–685(*)/TRC (figs. 2–38, 2–39, 2–40, or 2–41).
		Blower motor in T–302(*)/TRC does not operate.	Check cable from PP–685(*)/U to T–302(*)/TRC.
			Replace fuse F4 (fig. 4–22).
			Check air duct hose connection to blower motor (fig. 4–6) and replace air duct hose if necessary.
			Replace blower motor fan (fig. 4–23).
19	DC TEST meter indicates zero, and (amber) indicator does not glow.	150V ADJ control needs adjustment	Adjust 150V ADJ control.
		Defective indicator lamp	Replace lamp in indicator.
		Defective fuse F3	Replace F3 (fig. 4–22).
		Defective tube V5, V6, V7, V8, V9, or V10.	Replace defective tube.
20	750V DC (amber) indicator does not glow and DC TEST meter indicates zero.	Defective lamp in 750V DC indicator	Replace lamp in 750V DC indicator.
		Defective fuse F1	Replace fuse F1 (fig. 4–22).
		Defective tube V1, V2, or V3	Replace defective tube.
22	FREQ DRIFT meter does not indicate zero.	Defective tube V114, V118, V119, V120, V121, V122, or V123.	Replace defective tube.
23	MEASURE meter does not indicate maximum at each channel interval.	Defective tube V115	Replace V115 if necessary (fig. 4–24).
28	MEASURE meter indicates zero at each channel interval.	Defective tube V113, V114, V116, or V117.	Replace defective tube (fig. 4–24).
29	MEASURE meter does not indicate 0 db.	Defective tube V104	Replace defective tube V104 (fig. 4–24).
31	MEASURE meter does not indicate zero.	Defective tube V103	Replace defective tube (fig. 4–24).
33	MEASURE meter indicates zero	Defective tube V122 or V123	Replace defective tube (fig. 4–24).
43	Correct indication is not obtained on DC VOLTS meter.	Defective tube V4	Replace defective tube (fig. 4–22).
47	TEST meter indicates zero	Defective tube V101, V102, V104 (fig. 4–24); V105, V106, V107, V109, or V110.	Replace defective tube (B, fig. 4–23).

Item	Symptom	Probable cause	Corrective measure
48	ME-82/U indicates zero	Loose cable connector from ANTENNA of T-302(*)/TRC to ME-82/U.	Check cable connector.
		Defective tube V1	Replace tube V1 (fig. 4-25).
57	TEST meter does not indicate zero	Defective tube V101, V102, V104 (fig. 4-24), V105, V106, V107, V108, V109, or V110.	Replace defective tube (B, fig. 4-23).
59	TEST meter indicates zero	Defective tube V1	Replace tube V1 (fig. 4-26).
63	ME-82/U indicates zero	Loose cable connector from ANTENNA of T-302(*)/TRC to ME-82/U.	Check cable connector.
68	TEST meter does not indicate dip and ME-82/U indicates zero.	Defective tube V101, V102, V104 (fig. 4-24), V105, V106, V107, V108, V109, or V110 (B, fig. 4-23).	Replace defective tube.
70	TEST meter indicates zero	Defective tube V1 or V2	Replace defective tube (fig. 4-27).
79	TEST meter indicates zero	Defective tube V101, V102, V104 (fig. 4-24), V105, V106, V107, V108, V109, or V110 (B, fig. 4-23).	Replace defective tube.
80	TEST meter indicates zero	Defective tube V1 or V2	Replace defective tube (fig. 4-28).
81	ME-82/U indicates zero	Loose cable connector from ANTENNA of T-302(*)/TRC to ME-82/U.	Check cable.
91	TEST meter indicates zero	Defective tube V101, V102, V104 (fig. 4-24), V105, V106, V107, V108, V109, or V110 (fig. 4-23).	Replace defective tube.
92	TEST meter does not indicate 30μa.	Defective tube V101, V102, V104 (fig. 4-24); V105, V106, V107, V108, V109, or V110 (B, fig. 4-23).	Replace defective tube.
93	ME-82/U indicates less than 10 watts.	Defective tube V301, V302, V303, V304, or V401 (fig. 4-29).	Replace defective tube.
94	TEST meter (T-302(*)/TRC) does not indicate 40μa.	Defective ⅛ AMP. fuse (fig. 3-10)	Replace defective fuse.
95	TEST meter does not indicate between 14 or 20μa.	Defective tube V701 (fig. 4-30). Defective crystal Y701 (fig. 4-30).	Replace defective tube. Replace V701 if defective.
96	TEST meter does not indicate between 12 and 20μa.	Defective tube V702 (fig. 4-30)	Replace defective tube. Refer equipment to higher level of maintenance for repair.
97	TEST meter does not indicate between 16 and 26μa.	Defective tube V703 (fig. 4-30)	Replace defective tube. Refer equipment to higher level of maintenance for repair.
98	TEST meter does not indicate between 12 and 26 μa.	Defective O-902A/TRC-24, O-903A/TRC-24, or O-904A/TRC-24.	Replace defective O-902A/TRC-24, O-903A/TRC-24, or O-904A/TRC-24.
99	TEST meter does not indicate 42 μa.	Defective PP-685(*)/TRC or AM-3204A/TRC-24.	Replace defective part.
100	TEST meter does not indicate between 6 and 30 μa.	Defective tube V602 (fig. 4-31)	Replace defective tube.
101	TEST meter does not indicate approximately 15 μa.	Defective tube V601 (fig. 4-31)	Replace defective tube.
102	TEST meter does not indicate between 30 and 40 μa.	Defective tube V101, V102, V104 (fig. 4-24); V105, V106, V107, V108, V109, or V110 (B, fig. 4-23).	Replace defective tube.
103	TEST meter indicates more than 25 μa.	Defective tube V603 (fig. 4-31)	Replace defective tube.
104	ME-82/U indicates less than 10 watts, and TEST meter does not indicate between 35 and 48 μa.	Defective AM-3204A/TRC-24	Replace defective part.

Item	Symptom	Probable cause	Corrective measure
111	LOW PWR ALARM indicator does not glow and buzzer does not sound.	Defective LOW PWR ALARM indicator lamp. Defective tube V111 or V112 (A, fig. 4-23).	Replace defective part.
117	FREQ DRIFT meter does not not deflect positive portion of scale and returns to zero. FREQ DRIFT meter does not deflect negative and returns to zero.	Defective tube V124 or V125 (fig. 4-24).	Replace defective tube.
120	POWER indicator does not glow.	Loose cable from REC connector of TF-167/TRC to AC POWER connector of R-417(*)/TRC (fig. 2-38, 2-39, 2-40 or A, 2-41). Defective fuse F101 (B, fig. 2-42).	Check for loose cable. Replace defective fuse.
		Defective lamp in POWER indicator	Replace defective lamp.
122	MEASURE meter R-417(*)/TRC does not indicate 0 db ±0.5.	Defective ADJ METER control (A, fig. 2-42).	Replace defective meter.
		Defective tube V124(fig. A, 4-32)	Replace defective tube.
123	MEASURE meter does not indicate 10 μa or higher (A-, B-, C-, D-, or F-band).	Defective tube in receiving head AM-1179/GRC (V2, fig. 4-34), AM-913/TRC (V2, fig. 4-35), AM-914/TRC (V4, fig. 4-36), AM-1177/GRC (V4, fig. 4-37).	
		Defective tube V501 (fig. 4-48)	Replace if necessary (fig. 4-39).
		Check crystal CR501 (fig. 4-48)	Replace defective crystal (fig. 4-48).
124	MEASURE meter does not indicate 10 μa or higher (B-, C-, F-band).	Defective tube in receiver head AM-913/TRC (V2, fig. 4-35), AM-914/TRC (V3, fig. 4-36), CV-932/TRA-25. (IN2IER, fig. 4-38).	Replace defective tube.
	MEASURE meter does not indicate between 10 and 30 μa (J-band).	Defective crystal CR502 (fig. 4-38)	Replace defective crystal, or tub (figs. 4-38, 4-39).
		Defective tube V501 (fig. 4-39)	
		Defective crystal CR501	
125	MEASURE meter does not indicate 3 μa (A-, B-, C-, D-, or F-band).	Defective tube V102, V103, V104, V105, V106, or V107 (fig. A, 4-32) or applicable tube in receiver tuning head, AM-1179/GRC (V1, V2, or V3, fig. 4-37); AM-913/TRC (V1 or V2, fig. 4-35); AM-914/TRC (V1, V2, or V3, fig. 4-36); AM-1177/GRC (V1, V2, or V3, fig. 4-37).	Replace defective tube.
		Loose cable from REC OSC connector of AM-2537/TRA-25 to REC OSC connector of CV-932/TRA-25 (fig. 3-15).	Check cable connection.
	MEASURE meter does not indicate 10 μa (J-band).	Defective tube V101, V102, V103, V104, V105, or V107 (fig. A, 4-32) or tube V502 and V503 (fig. 4-39).	Replace defective tube.
126	MEASURE meter does not indicate more than 10 μa.	Defective tube V109 (A, fig. 4-32)	Replace defective tube.
128	MEASURE meter indicates more than 2 μa.	AFC BAL control needs adjustment	Adjust AFC BAL (fig. 2-42).
		Defective tube V110, V111, V112, V113, V114, or V115 (A, fig. 4-32).	Replace defective tube.

Item	Symptom	Probable cause	Corrective measure
129	MEASURE meter does indicate 30 ua after tube warms up.	Defective 150V ADJ control (B, fig. 2-42).	Adjust 150V ADJ control.
		Defective tube V116,V117, V118,V119,or V120 (B, fig. 4-32).	Replace defective tube.
131	MEASURE meter does not indicate 5 μa. Alarm indicator does not glow, and buzzer does not sound.	Defective tube V125 (A, fig. 4-32)	Replace defective tube.
136	MEASURE meter does not indicate 5 μa. Alarm indicator does not glow and buzzer does not sound.	Defective tube V125 (A, fig. 4-32)	Replace defective tube.
154	MEASURE meter does not indicate 5 μa. Alarm does not glow and buzzer does not sound.	Defective tube V125 (A, fig. 4-32)	Replace defective part.
157	MEASURE meter indicates zero. FREQ DRIFT meter does not indicate zero. Buzzer does not sound.	Defective crystal CR501 or CR502 (fig. 4-48).	Replace defective crystal (fig. 4-48).
		Defective tube V504 (fig. 4-39)	Replace defective tube.
164	MEASURE meter indicates zero	Defective AM-3203A/TRC-24	Replace defective part.
165	MEASURE meter indicates zero	Defective F-691/TRC-24	Replace defective part.
175	MEASURE meter indicates zero	Defective tube V108 (A, fig. 4-32)	Replace defective tube.
176	MEASURE meter does not indicate 0 db ±0.5.	Defective tube V121, V122, V123, or V124 (A, fig. 4-32).	Replace defective tube.
177	RING indicator does not glow and buzzer does not sound.	Defective RING indicator lamp.	Replace lamp.
		Defective tube V127, V128, or V129 (A, fig. 4-32).	Replaced defective tube.
179	MEASURE meter on R-417(*)/TRC does not indicate transmission.	Defective tube V129 (A, fig. 4-32)	Replace defective tube.
180	Order-wire signals are not received.	Defective tube V126 (A, fig. 4-32)	Replace defective tube.

4-17. Lubrication

Caution: **Do not overlubricate. Accumulation of lubricant with dirt may cause serious damage to movable parts.**

All lubrication for this equipment is performed on a yearly basis except the transmitter blower motor (A, fig. 4-7), which is lubricated on a quarterly basis, the AB-325/TRC guy plates (A, fig. 4-21), and the T-302(*)/TRC attenuator bearings and shaft bearings (fig. 4-6), which are lubricated every 3 years. Use the procedures outlined below when lubricating the equipment.

a. Refer to the appropriate figure (figs. 4-4 through 4-21) to determine the type of lubricant, the time interval, and the specific instructions for the amount of lubricant required.

b. Before lubrication, clean all surfaces to be lubricated with a lint free cloth dampened with cleaning compound.

c. After lubrication, wipe off all excess lubricant with a dry lint free cloth.

4-18. Preservation

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB SIG 364.

4-19. Repair and Replacement

a. Tube Testing and Replacement.

(1) *Tube testing techniques.* When trouble occurs, check all cabling, connections, and fuses before removing any tubes. Try to isolate the trouble to a component or stage. If tube failure is suspected, use the applicable procedures below to check the tubes.

Caution: **Never rock or rotate a tube when removing it from a socket; pull it straight out with a tube puller.**

(2) *Use of tube tester.* Remove and test one tube (figs. 4–22 through 4–40) at a time. Discard a tube only if its defect is obvious or if the tube tester shows it to be defective. Do not discard a tube that tests at or slightly below its minimum test limit. Replace the original tube, or install a new one if required, before testing the next one.

(3) *Tube substitution method.* Replace a suspected tube with a new tube. If this does not correct the trouble, remove the new tube and replace the original tube. Repeat this procedure with each suspected tube until the defective tube is located.

b. Replacement of Doubler Tube in 0–734/TRA–25 or 0–735/TRA–25 (F-Band) (fig. 4–29).

(1) Remove the 0–734/TRA–25 or 0–735/TRA–25 from the transmitting tuning head (F-band) as follows:

(*a*) Disconnect the receiver injection cable from the transmitter tuning head (not shown).

(*b*) Disconnect the mixer cable (not shown) from the mixer connector.

(*c*) Disconnect the airhose (not shown) from the airhose connector.

(*d*) Loosen the retaining screws and remove the oscillator-multiplier chassis from the transmitter tuning head (not shown).

(2) Remove doubler tube V304 from the doubler cavity as follows:

(*a*) Loosen the cavity screws and turn the retaining clamps away from the retaining slots.

(*b*) Lift the cavity head straight up from the cavity base.

(*c*) Remove the doubler tube from the cavity base.

Caution: **The doubler tube has a nylon tube guide on the pin end. Remove the tube guide and retain the tube guide for the replacement tube.**

(3) Replace doubler tube V304 in the doubler cavity as follows:

Caution: **Install the nylon tube guide on the pin end of the doubler tube before inserting the doubler tube in the cavity base.**

(*a*) Carefully align the guide keys of the nylon tube guide and insert the doubler tube in the cavity base.

(*b*) Seat the cavity head on the cavity base.

(*c*) Swivel the retaining clamps into the retaining slots and tighten the cavity screws.

(4) Replace the 0–734/TRA–25 or 0–735/TRA–25 in the transmitter tuning head (F-band) as follows:

(*a*) Position the oscillator-multiplier chassis in the transmitter tuning head (not shown) and tighten the retaining screws.

(*b*) Connect the airhose (not shown) to the airhose connector.

(*c*) Connect the mixer cable (not shown) to the mixer connector.

(*d*) Connect the receiver injection cable to the transmitter tuning head (not shown).

c. Replacement of Mixer Tube (Transmitter Tuning Head (F-Band)) (fig. 4–31).

(1) *Removal.*

(*a*) Loosen the retaining screws and remove the rear cover from the tuning head chassis.

(*b*) Remove the screws, the lockwashers, and the washers, and slide the retaining plate out of the tuning head chassis.

(*c*) Loosen the screws, the lockwashers, and the washers and slide the power supply chassis out and to the left of the tuning head chassis.

(*d*) Remove the screws, washers, and retaining clamp.

(*e*) Disconnect the high pass filter from connector J103.

(*f*) Disconnect the driver cable from connector J101.

(*g*) Twist the retaining clamp approximately one-quarter turn and disconnect connector J102 from the cavity head.

(*h*) Loosen the retaining screws and slide the cavity head straight back from the cavity base.

(*i*) Remove mixer tube from the cavity base.

(2) *Replacement.*

(*a*) Carefully align the guide keys and insert the mixer tube in the cavity base.

(*b*) Position the cavity head on the cavity base and tighten the retaining screws.

(*c*) Connect connector J102 to the cavity head and twist the retaining clamp one-quarter turn to secure connector J102 to the cavity head.

(*d*) Connect the driver cable to connector J101 on the cavity head.

(*e*) Connect the high pass filter to connector J103 on the cavity head.

(*f*) Secure the high pass filter with the retaining clamp, washers, and screws.

(*g*) Position the power supply chassis on the tuning head chassis and secure with the washers, the lockwashers, and the screws.

(*h*) Slide the retaining plate in position on the tuning head chassis and secure with the washers, lockwashers, and screws.

(*i*) Position the rear cover on the tuning head chassis and secure with the retaining screws.

d. Replacement of Final Amplifier Tube (Transmitter Tuning Head (F-Band)) (fig. 4–31).

(1) *Removal.*

(*a*) Loosen the retaining screws and remove the rear cover from the tuning head chassis.

(*b*) Remove the final amplifier tube from the final amplifier cavity.

(2) *Replacement.*

(*a*) Seat the final amplifier tube in the final amplifier cavity.

(*b*) Position the rear cover on the tuning head chassis and secure with the retaining screws.

e. Replacement of Air Filter (R–417(*)/TRC or PP–685(*)/TRC) (figs. 4–41 and 4–42).

(1) *Removal.*

(*a*) Loosen the camlock fasteners that secure the filter clamp to the rear of the chassis and remove the filter clamp.

(*b*) Remove the air filter from the chassis.

(2) *Cleaning.*

(*a*) Wash the air filter with cleaning compound.

(*b*) Drain and dry thoroughly.

(3) *Replacement.*

(*a*) Replace the air filter with the arrow pointing toward the front panel (in the direction of airflow).

(*b*) Replace the filter clamp and tighten the camlock fasteners.

f. Replacement of Air Filter (T–302(*)/TRC) (fig. 4–43).

(1) *Removal.*

(*a*) Remove the transmitter from the carrying case.

(*b*) Loosen the retaining screws on the rear filter clamp.

(*c*) Remove the retaining screws on the front filter clamp and remove the front filter clamp.

(*d*) Remove the air filter.

(2) *Cleaning.*

(*a*) Wash the air filter in cleaning compound.

(*b*) Allow the air filter to drain.

(*c*) Mix a bath of cleaning compound with a few drops of Lubricating Oil, Compounded SAE–30.

(*d*) Place the air filter in the bath to coat the air filter with a thin film of oil.

(*e*) Remove and drain the air filter and allow to dry thoroughly.

(3) *Replacement.*

(*a*) Replace the air filter with the arrow pointing toward the bottom of the carrying case (in the direction of airflow).

(*b*) Position the front retaining clamp and secure it in place with the retaining screws.

(*c*) Tighten the screws on the rear retaining clamp.

g. Replacement of Amplifier-Converter AM–3203A/TRC–24 (J-Band) Receiver Oscillator Tube V501 (figs. 4–45 and 4–46).

Note. When oscillator tube V501 is replaced, the AM–3203A/TRC–24 must be realigned. To replace the oscillator tube, follow the tube replacement and realignment procedures given in (1) through (33) below.

(1) Remove the AM–3203A/TRC–24 from the R–417(*)/TRC.

(2) Loosen the captive screws and remove the top and left covers from the AM-3203A/TRC-24.

(3) Remove the **L**- and **U**-shaped tools (fig. 4-39).

(4) Loosen the captive screws (fig. 4-45) and remove the tube cover from the rear panel.

(5) Remove the tube assembly from the cavity.

(6) Remove tube V501 from its socket and replace it with a new tube.

Caution: **Be certain that tube V501 is properly centered when inserting in cavity so that the tube plate cap makes proper alignment with tube plate line contact. Force, with improper alignment may cause C501 to short out.**

(7) Replace the tube assembly in the cavity.

(8) Align the scribed line on the tube cover with the scribed line on the rear panel and secure the tube cover with the captive screws.

(9) Adjust the INDEX control (fig. 3-16) until the index line of the OSCILLATOR is aligned with the scribed line on the oscillator dial frame.

(10) Connect the CX-2406/U between the connector at the rear of the AM-3203A/TRC-24 and the connector on the inside of the R-417 (*)/TRC tuning head compartment.

(11) Turn on the R-417(*)/TRC and allow 15 minutes for warmup.

(12) Adjust the PRESELECTOR control until the red calibration mark, at approximately channel B-220 (wth green back-ground), appears under the index of the PRESELECTOR dial.

(13) Adjust the OSCILLATOR control until the red calibration mark, at approximately channel B-220 (with green back-ground), appears under the index line of the OSCILLATOR dial.

(14) Operate the MEASURE switch of the R-417(*)/TRC-24 to MIX.

(15) Position the AM-3203A/TRC-24 on the right side (fig. 4-46).

(16) Loosen the yoke capscrews with a No. 10 multiple spline wrench. Two of the yoke capscrews are accessible through the access slot.

(17) Position the end of the U-shaped tool through the guide pin and plunger pin (fig. 4-46), and slide the yoke to a position where the MEASURE meter of the R-417(*)/TRC indicates a maximum.

(18) Tighten the yoke capscrews ((16) above) and remove the **U**-shaped tool.

(19) Adjust R501 (fig. 4-45) for maximum indication on the R-417(*)/TRC MEASURE meter.

(20) Position the **L**-shaped tool as shown on figure 4-46. Be sure that the Allen wrench is engaged with the setscrew on the dial shaft clamp.

(21) Secure the **L**-shaped tool to the tool mounting frame with the retaining screw.

(22) Turn the Allen wrench counterclockwise to loosen the setscrew on the dial shaft clamp.

(23) Operate the MEASURE switch of the R-417(*)/TRC to 2ND LIM.

(24) Depress the CALIBRATE switch (fig. 3-16) and adjust the OSCILLATOR control for a maximum indication on the MEASURE meter and a zero indication on the FREQ DRIFT meter of the R-417(*)/TRC.

(25) Release the CALIBRATE switch.

(26) Insert a screwdriver in the dial shaft slot (fig. 4-39) and rotate the dial until the red calibration mark, at approximately RF channel number B-220 (with green background), is under the index line.

(27) Turn the Allen wrench, positioned in the **L**-shaped tool, clockwise to tighten the setscrew on the dial shaft clamp.

(28) Loosen the retaining screw, on the **L**-shaped tool, and remove the **L**-shaped tool (fig. 4-46).

(29) Operate the R-417(*)/TRC MEASURE switch to MIX.

(30) Adjust R501 (fig. 4-45) for maximum indication on the R-417(*)/TRC MEASURE meter.

(31) Secure the **L**- and **U**-shaped tools in the top cover (fig. 4-39) and replace the top and left side covers of the AM-3203/TRC-24.

(32) Disconnect the CX-2406/U from between the rear of the AM-3203A/TRC-24 and the connector on the inside of the R-417(*)/TRC tuning head compartment.

(33) Install the AM-3203A/TRC-24 in the R-417(*)/TRC tuning head compartment.

h. Alignment of Oscillator-Multiplier 0-902*A/TRC*-24, 0-903*A/TRC*-24, *or* 0-904*A/TRC*-24 (fig. 4-30).

Note. If a tube has been replaced in the 0.902A/TRC-24, 0-903A/TRC-24, or 0-904A/TRC-24, or the equipment has not been used for a long period of time, perform the alignment procedures given in (1) through (19) below.

(1) Disconnect the CX-2324A/U (fig. 2-40) from between the AM-3204A/TRC-24 POWER connector and the 0-902A/TRC-24, 0-903A/TRC-24, or 0-904A/TRC-24 POWER connector.

(2) Remove the 0-902A/TRC-24, 0-903A/TRC-24, or 0-904A/TRC-24 from the T-302(*)/TRC and install the dummy filter in its place.

(3) Disconnect the CX-2252/U from between the R-417(*)/TRC TRANSMITTER connector and the T-302(*)/TRC RECEIVER connector.

(4) Connect the CX-2252/U between the AM-3204A/TRC-24 POWER connector and the 0-902A/TRC-24, 0-903A/TRC-24, or 0-904A/TRC-24 POWER connector.

(5) Position the TEST MULT CATH switch on the AM-3204A/TRC-24 to B+ VOLTS.

(6) Position the TEST switch on the T-302(*)/TRC to MULT CATH. The TEST meter on the T-302(*)/TRC should indicate 40 microamperes.

(7) Position the TEST MULT CATH switch on the AM-3204A/TRC-24 to OSC CATH.

(8) Adjust the L723 control (fig. 4-30) for a maximum (14 to 20 microamperes) indication on the T-302(*)/TRC TEST meter.

(9) Position the TEST MULT CATH switch on the AM-3204A/TRC-24 to DBLR CATH.

(10) Adjust the L724 control (fig. 4-30) for a maximum (12 to 20 microamperes) indication on the T-302(*)/TRC TEST meter.

(11) Position the TEST MULT CATH switch on the AM-3204A/TRC-24 to AMPL CATH.

(12) Adjust the C740 control (fig. 4-30) for a maximum (16 to 26 microamperes) indication on the T-302(*)/TRC TEST meter.

(13) Position the TEST MULT CATH switch on the AM-3204A/TRC-24 to INJECTION DR.

(14) Adjust C741 control (fig. 4-30) for a maximum (12 to 26 microamperes) indication on the T-302(*)/TRC TEST meter.

(15) Adjust C742 (fig. 4-30) control for a maximum (12 to 26 microamperes) indication on the T-302(*)/TRC TEST meter.

(16) Repeat the procedures given in (5) through (15) above.

(17) Disconnect the CX-2252/U from between the AM-3204A/TRC-24 POWER connector and the 0-902A/TRC-24, 0-903A/TRC-24, or 0-904A/TRC-24 POWER connector.

(18) Remove the dummy filter from the T-302(*)/TRC and install the 0-902A/TRC-24, 0-903A/TRC-24, 0-904A/TRC-24 in its place.

(19) Connect the CX-2324A/U as shown on figure 2-40.

*i. Replacement of Diode CR*503 *in Amplifier-Converter AM*-3203*A/TRC*-24 *(figs.* 4-39 *and* 4-47).

(1) Disconnect connectors P511 and P512 from the calibrator chassis.

(2) Remove the calibrator retaining screws from the side of the AM-3203A/TRC-24 (fig. 4-39).

(3) Lift the calibrator chassis out of the AM-3203A/TRC-24.

(4) Remove the calibrator cover screws and remove the calibrator cover (fig. 4-47).

(5) Loosen the captive screw on the insulated post (fig. 4-47) and slide the retaining spring to the side of the insulated post to release crystal CR503.

(6) Lift the crystal from the crystal holder.

(7) Replace the crystal with a new 1N21B type crystal.

(8) Replace the retaining spring on the insulated post and tighten the captive screw to secure the crystal in the crystal holder.

(9) Replace the calibrator cover on the calibrator subassembly and replace and tighten the calibrator cover screws.

(10) Replace the calibrator subassembly in the AM–3203A/TRC–24.

(11) Secure the calibrator subassembly to the AM–3203A/TRC–24 with the calibrator retaining screws (fig. 4–39).

(12) Connect connectors P511 and P512 to to the calibrator subassembly.

j. Replacement of Diodes CR501 or CR502 in Amplifier-Converter AM–3203A/TRC–24 (figs. 4–39, 4–46, and 4–48).

(1) Disconnect connectors P511 and P512 from the calibrator subassembly.

(2) Remove the calibrator retaining screws from the side of the AM–3203A/TRC–24 (fig. 4–39).

(3) Lift the calibrator subassembly out of the AM–3203A/TRC–24.

(4) Disconnect connectors P507 and P508 from the mixer–IF. amplifier subassembly (fig. 4–39).

(5) Remove the mixer–IF. amplifier retaining screws from the bottom of the AM–3203A/TRC–24 (fig. 4–46).

(6) Lift the mixer–IF. amplifier subassembly out of the AM–3203A/TRC–24.

(7) Remove the crystal holder cap from CR501 or CR502 (fig. 4–48), by turning the knurled crystal holder cap counterclockwise.

(8) Remove crystal CR501 or CR502 from the holder and replace it with a new 1N21WE type crystal.

(9) Replace the crystal holder cap over the crystal and turn the cap clockwise to secure the crystal in the holder.

(10) Replace the mixer–IF. amplifier subassembly in the AM–3203A/TRC–24.

(11) Secure the subassembly to the AM–3203A/TRC–24 with the mixer–IF. amplifier retaining screws (fig. 4–46).

(12) Connect connectors P507 and P508 to the mixer–IF. amplifier subassembly.

(13) Replace the calibrator subassembly in the AM–3203A/TRC–24 and secure it with the calibrator retaining screws (fig. 4–39).

(14) Connect connectors P511 and P512 to the calibrator subassembly.

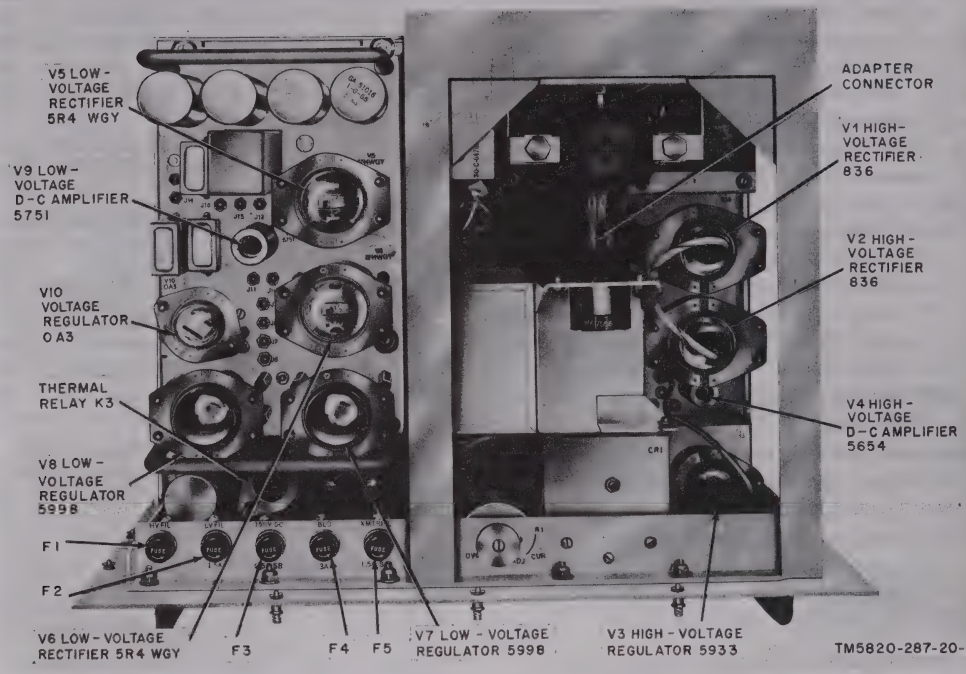


Figure 4–22. PP–685(*)/TRC, tube locations, top view.

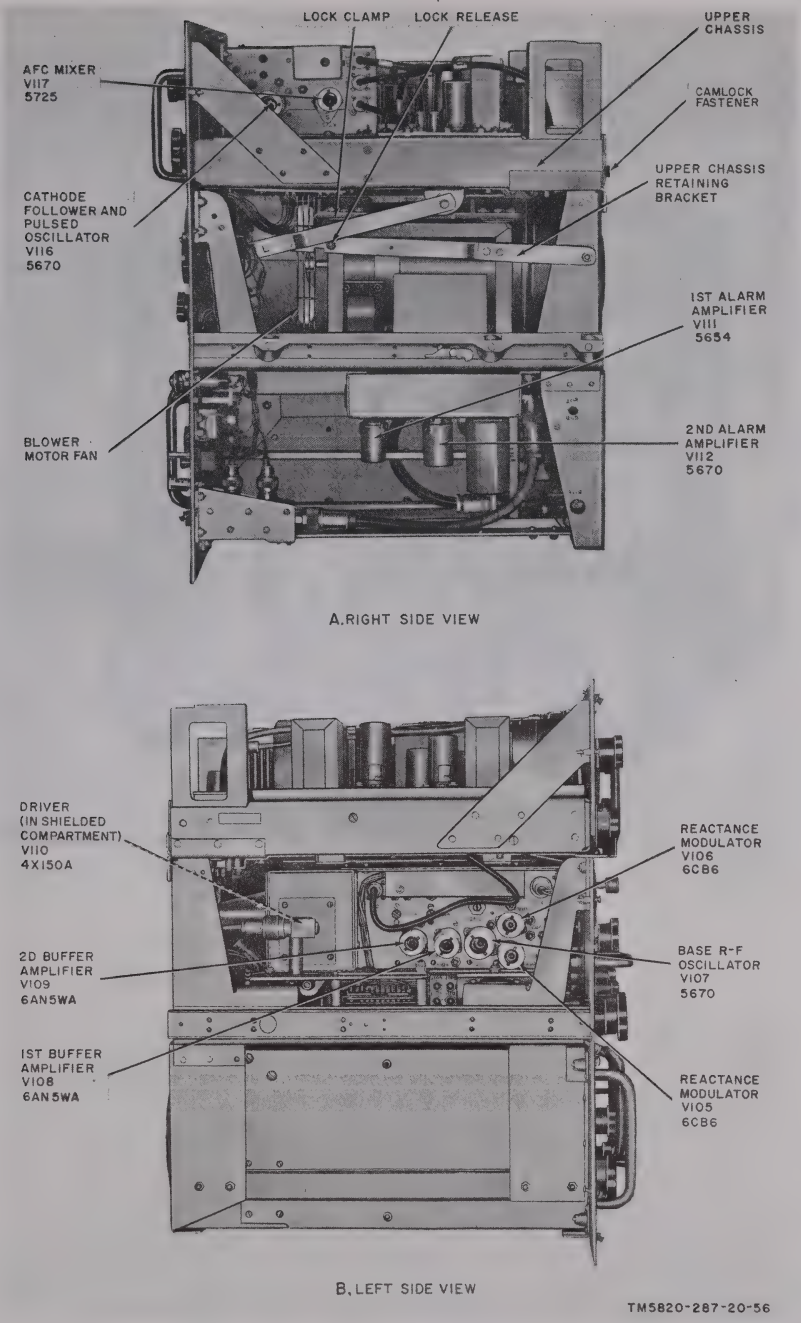


Figure 4-23. T-302(*)/TRC, tube locations, side and bottom views.

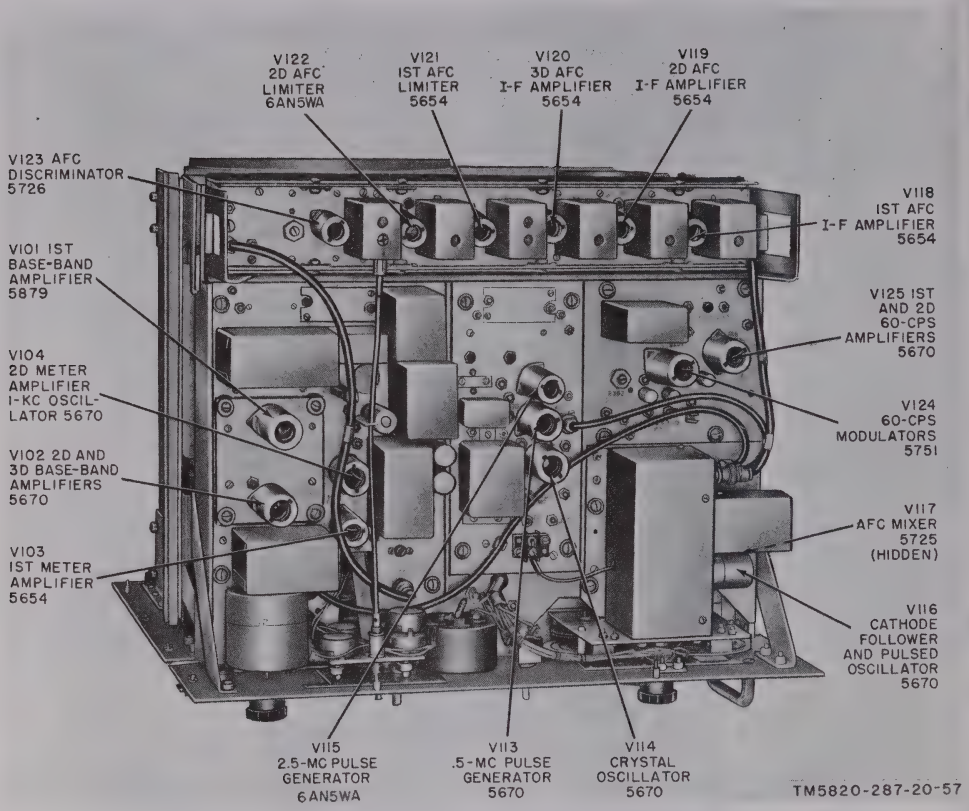


Figure 4-24. T-302(*)/TRC, tube locations, top view.

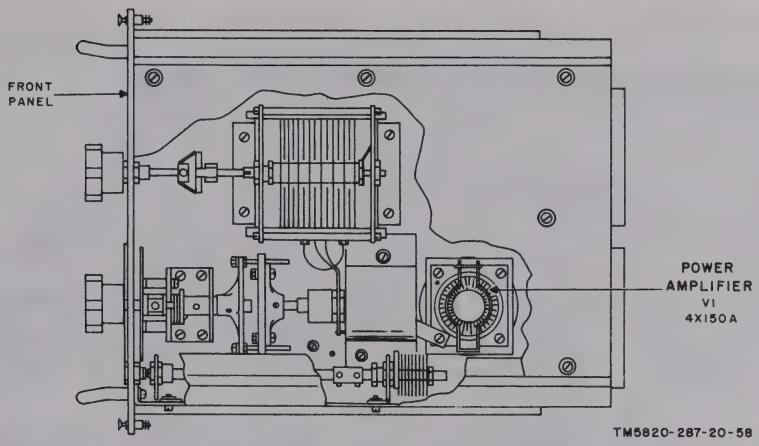


Figure 4-25. AM-1180/GRC (A-band), tube locations, bottom view.

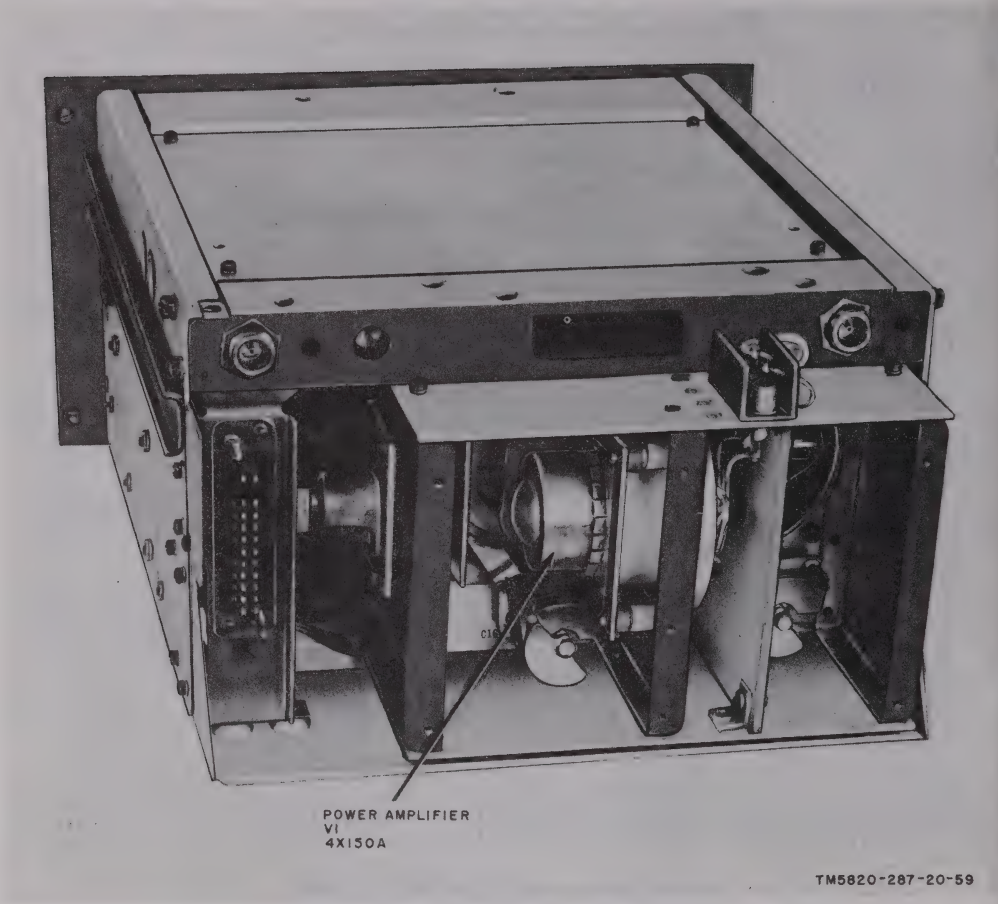


Figure 4-26. AM-912(*)/TRC (B-band), tube locations, rear view.

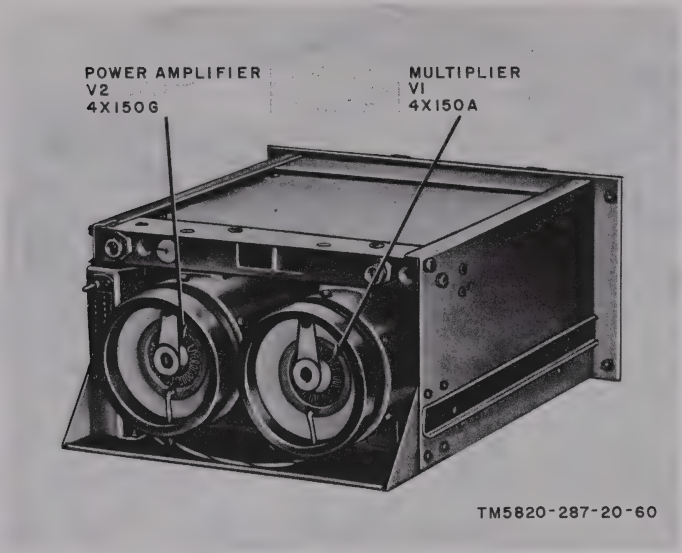


Figure 4–27. AM–915(*)/TRC (C-band), tube locations, rear view.

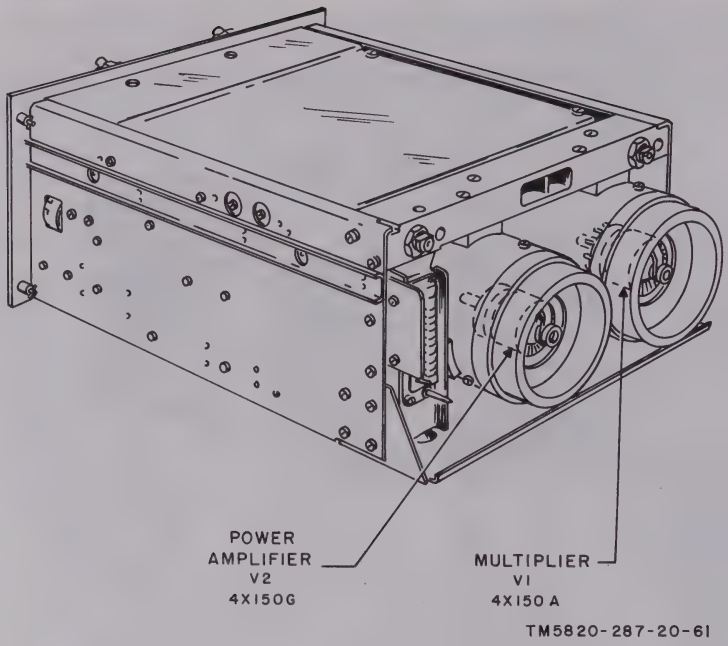


Figure 4–28. AM–1178/GRC (D-band), tube locations, rear view.

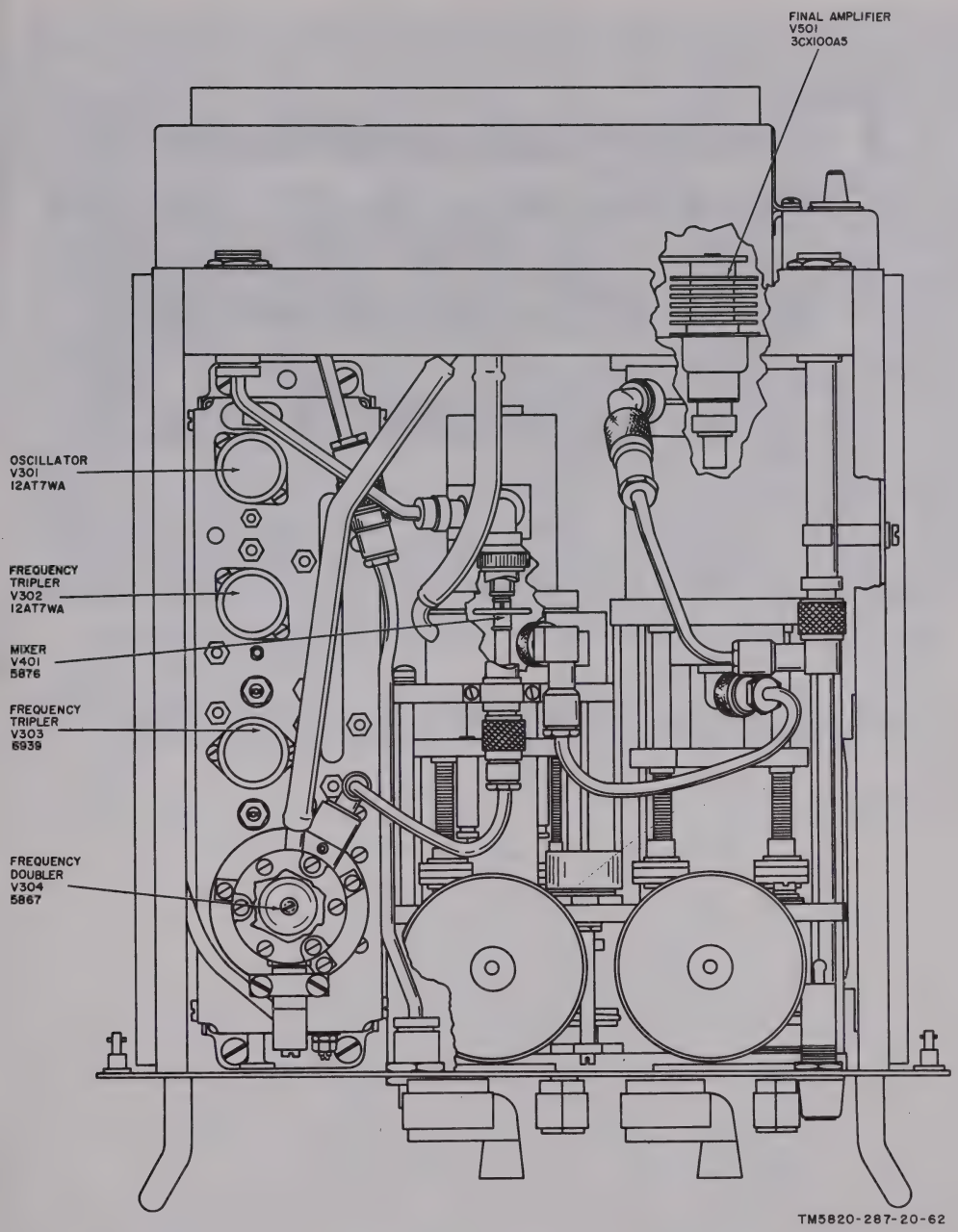


Figure 4-29. AM-2537/TRA-25 (F-band), tube locations, top view.

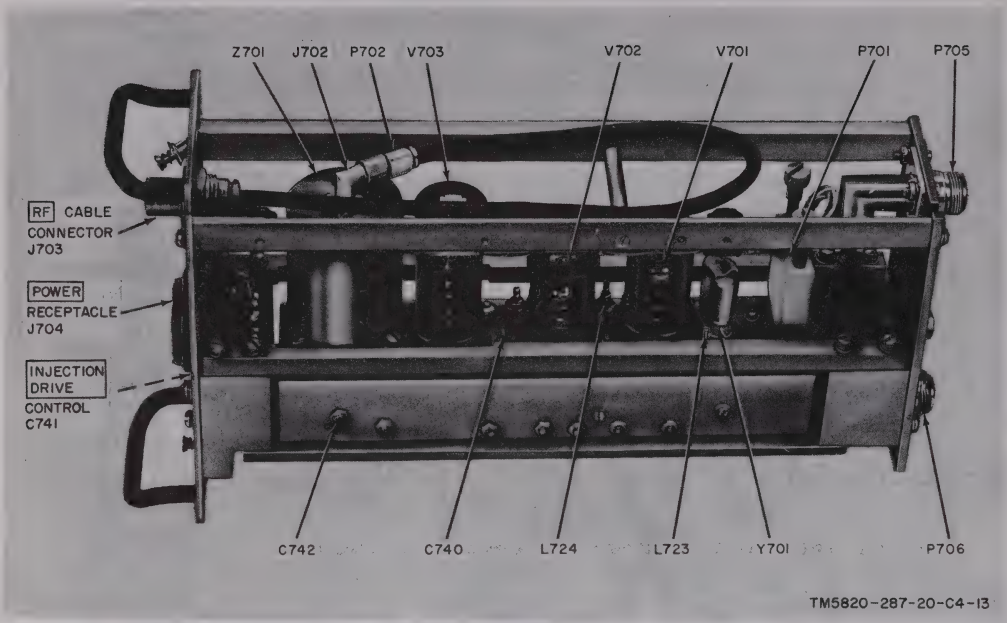


Figure 4–30. O–902A/TRC–24, O–903A/TRC–24, or O–904A/TRC–24 (J-band), tube and crystal location.

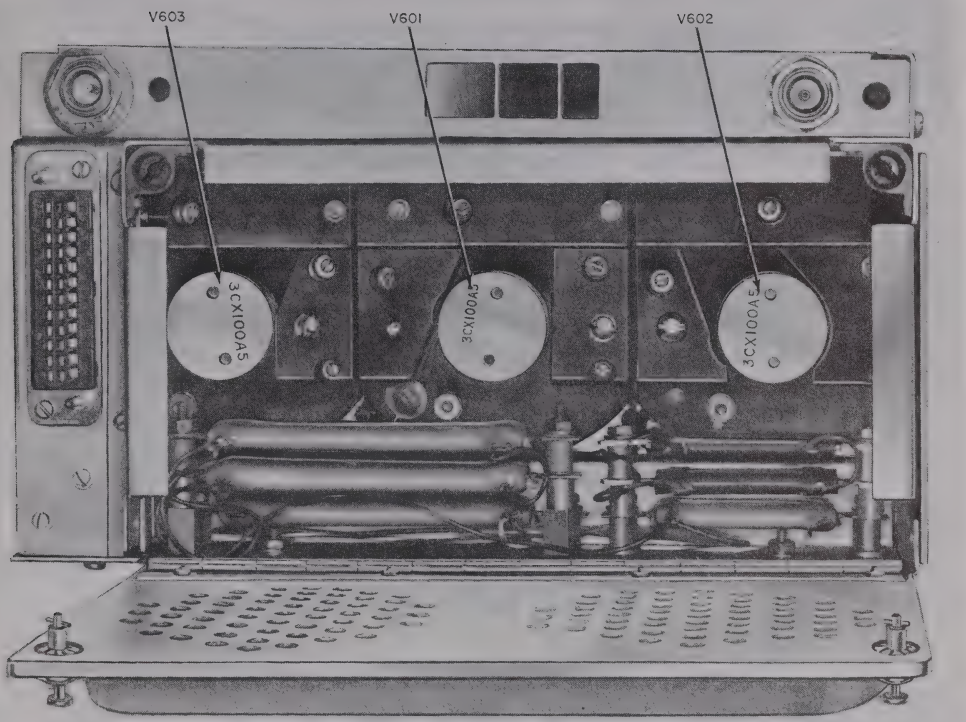
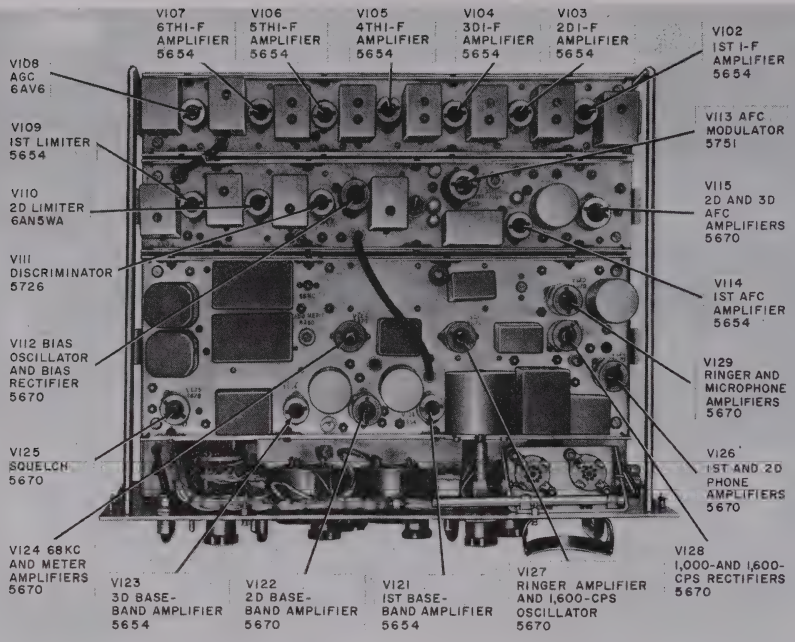
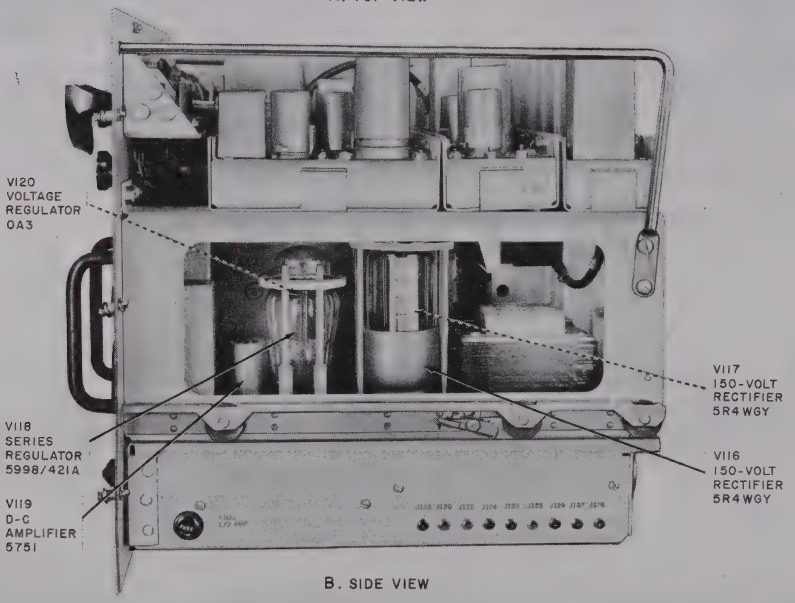


Figure 4-31. AM-3204A/TRC (J-band), tube locations, rear view.


V107 6THI-F AMPLIFIER 5654
V106 5THI-F AMPLIFIER 5654
V105 4THI-F AMPLIFIER 5654
V104 3DI-F AMPLIFIER 5654
V103 2DI-F AMPLIFIER 5654
V102 IST I-F AMPLIFIER 5654
V108 AGC 6AV6
V113 AFC MODULATOR 5751
V109 IST LIMITER 5654
V110 2D LIMITER 6AN5WA
V115 2D AND 3D AFC AMPLIFIERS 5670
V111 DISCRIMINATOR 5726
V114 IST AFC AMPLIFIER 5654
V112 BIAS OSCILLATOR AND BIAS RECTIFIER 5670
V129 RINGER AND MICROPHONE AMPLIFIERS 5670
V125 SQUELCH 5670
V126 IST AND 2D PHONE AMPLIFIERS 5670
V124 68KC AND METER AMPLIFIERS 5670
V128 1,000-AND 1,600-CPS RECTIFIERS 5670
V123 3D BASE-BAND AMPLIFIER 5654
V122 2D BASE-BAND AMPLIFIER 5670
V121 IST BASE-BAND AMPLIFIER 5654
V127 RINGER AMPLIFIER AND 1,600-CPS OSCILLATOR 5670

A. TOP VIEW


V120 VOLTAGE REGULATOR 0A3
V117 150-VOLT RECTIFIER 5R4WGY
V118 SERIES REGULATOR 5998/421A
V116 150-VOLT RECTIFIER 5R4WGY
V119 D-C AMPLIFIER 5751

B. SIDE VIEW

TM5820-287-20-63

Figure 4-32. R-417(*)/TRC, top and side views.

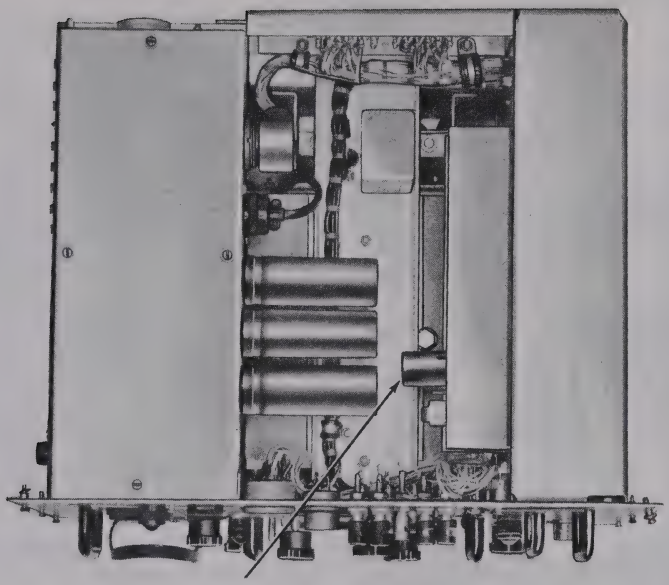


Figure 4-33. R-417(*)/TRC, tube locations, bottom view.

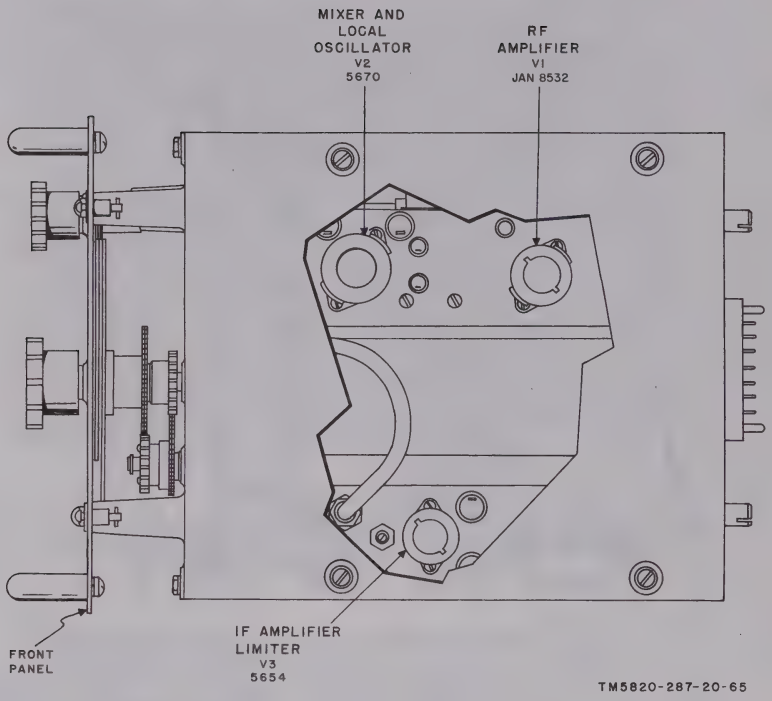


Figure 4-34. AM-1179/GRC (A-band), tube locations, bottom view.

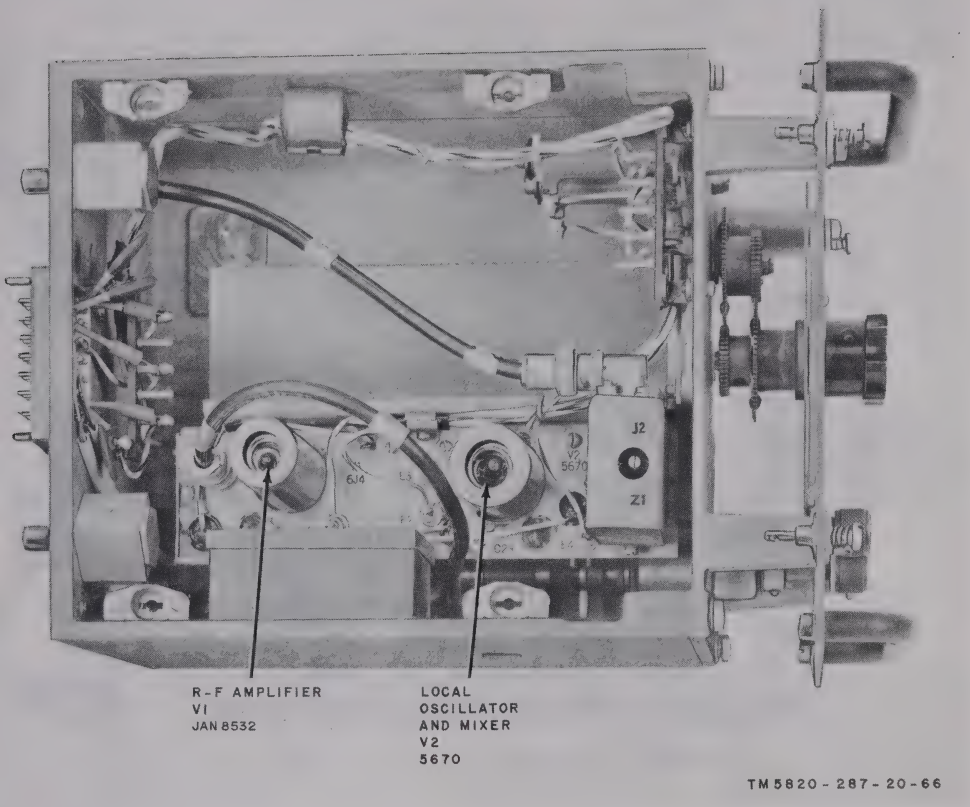


Figure 4-35. AM-913/TRC (B-band), tube locations, top view.

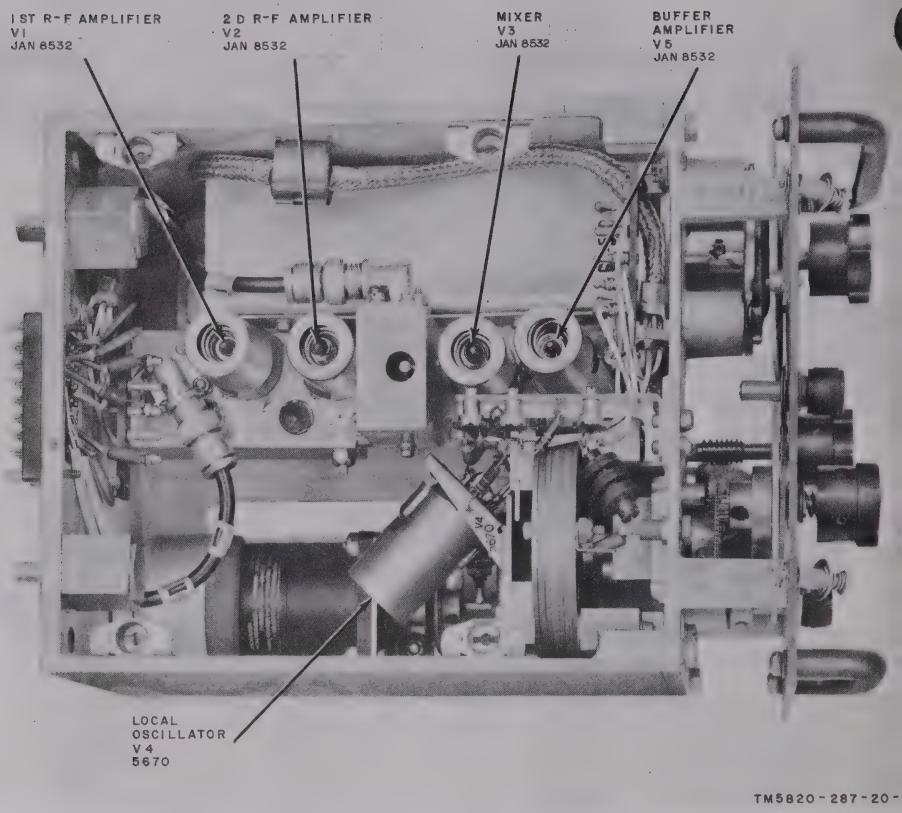


Figure 4-36. AM-914/TRC (C-band), tube locations, top view.

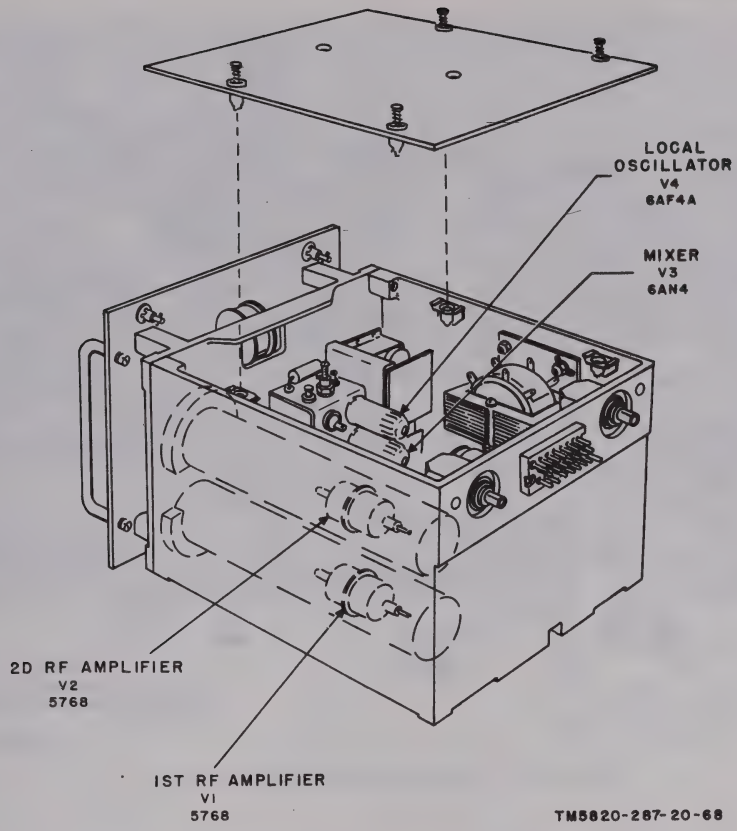


Figure 4-37. AM-1177/GRC (D-band), tube locations.

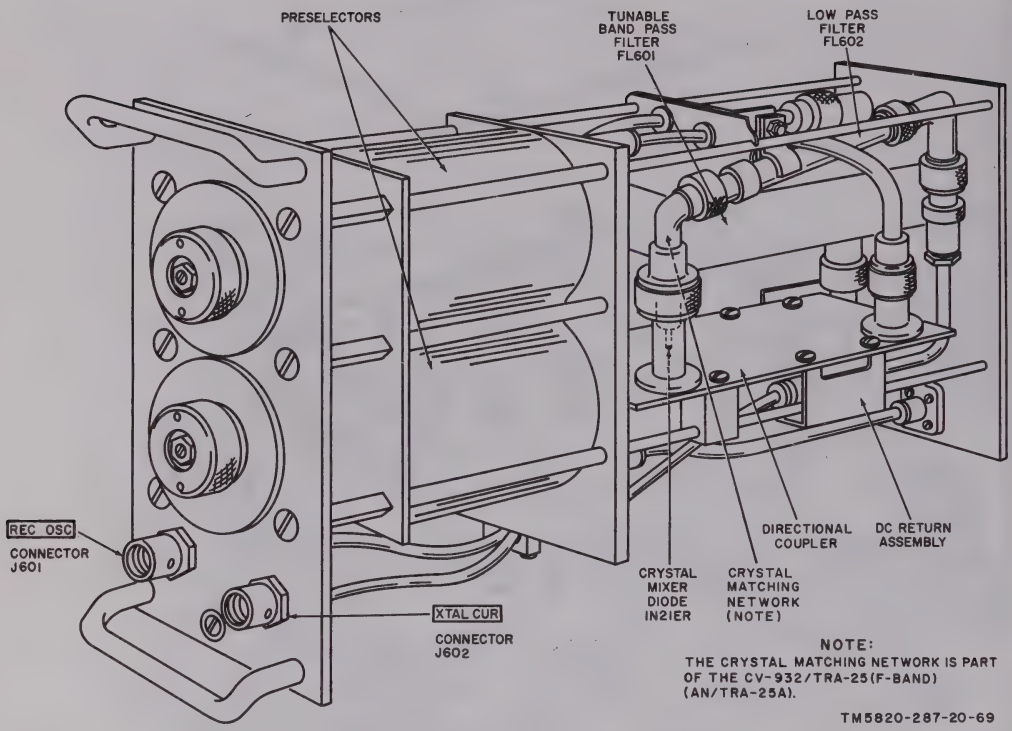


Figure 4-38. CV-932/TRA-25 (F-band), parts location.

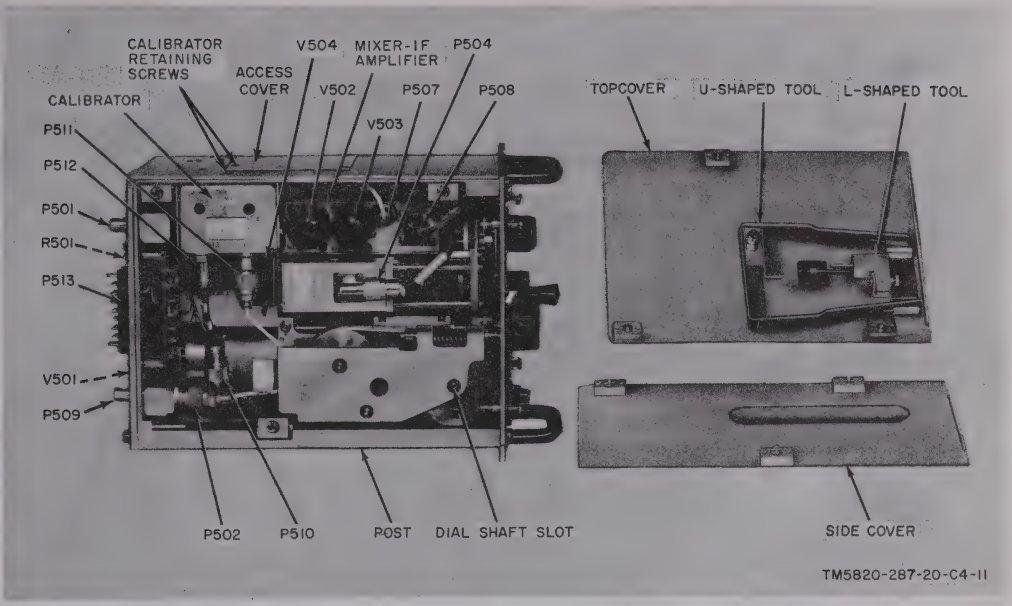


Figure 4–39. AM–3203A/TRC–24 (J-band), parts and tools location.

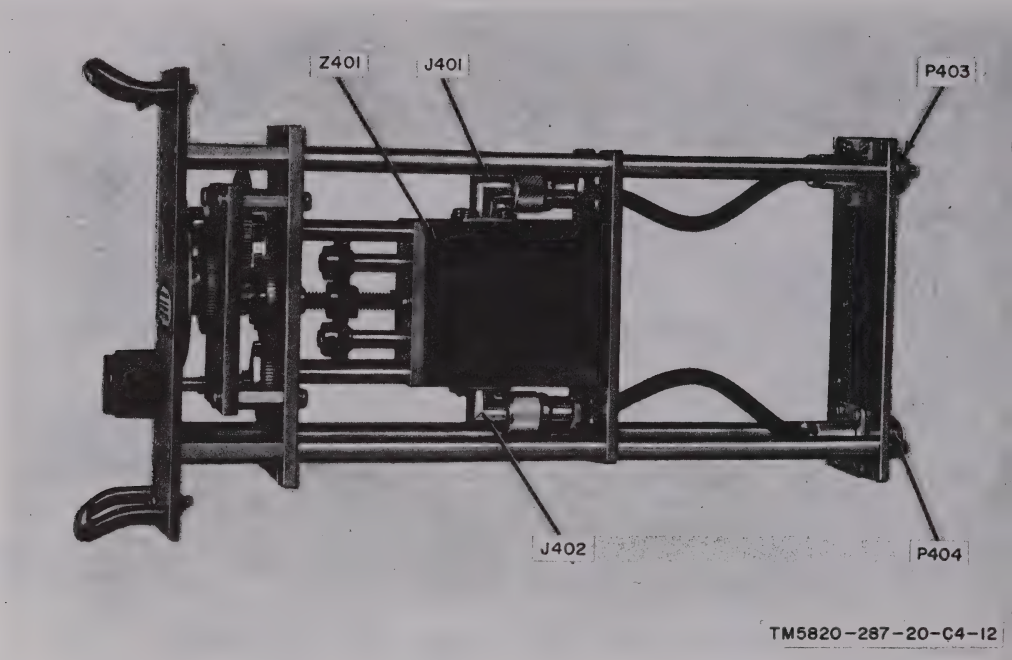


Figure 4-40. F-691/TRC-24 (J-band), parts location.

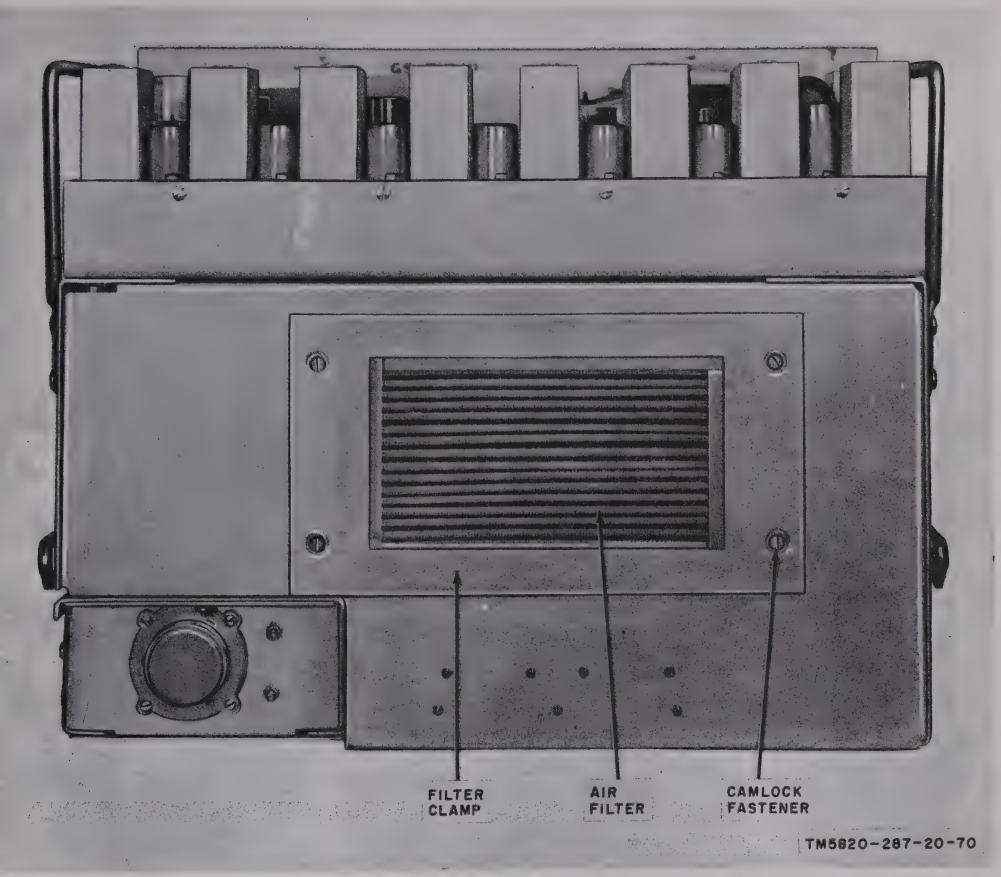


Figure 4-41. R-417(*)/TRC, location of air filter, rear view.

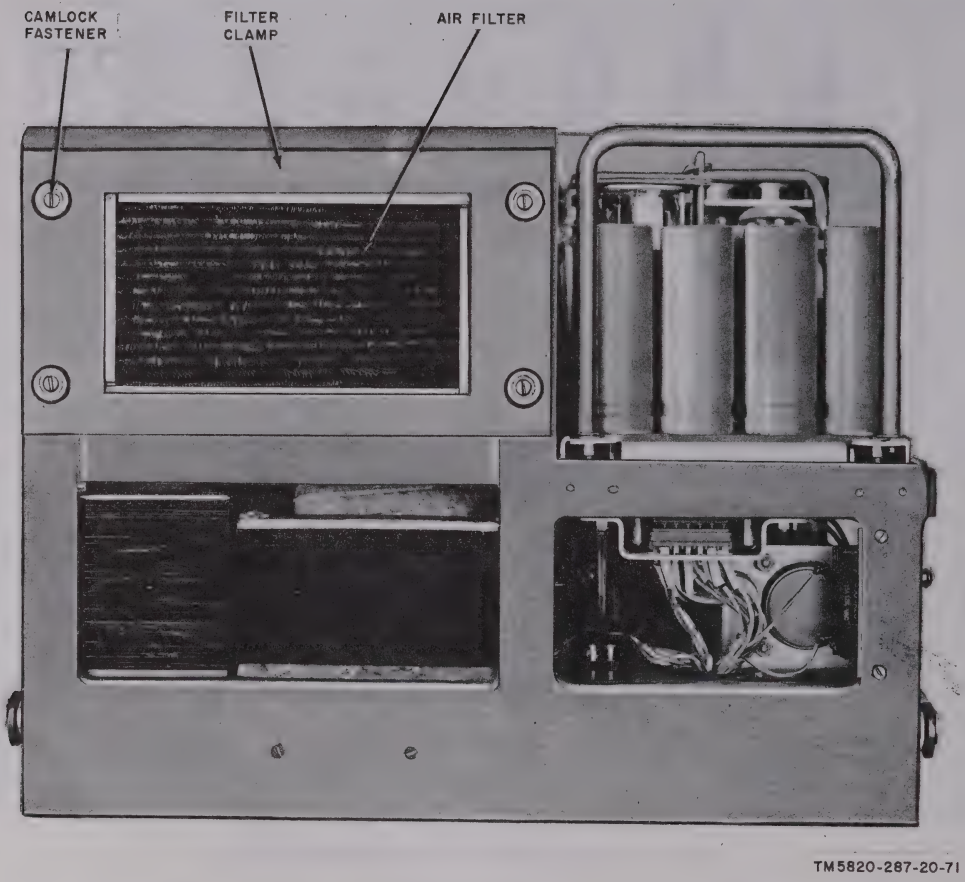


Figure 4-42. PP-685(*)/TRC, location of air filter, rear view.

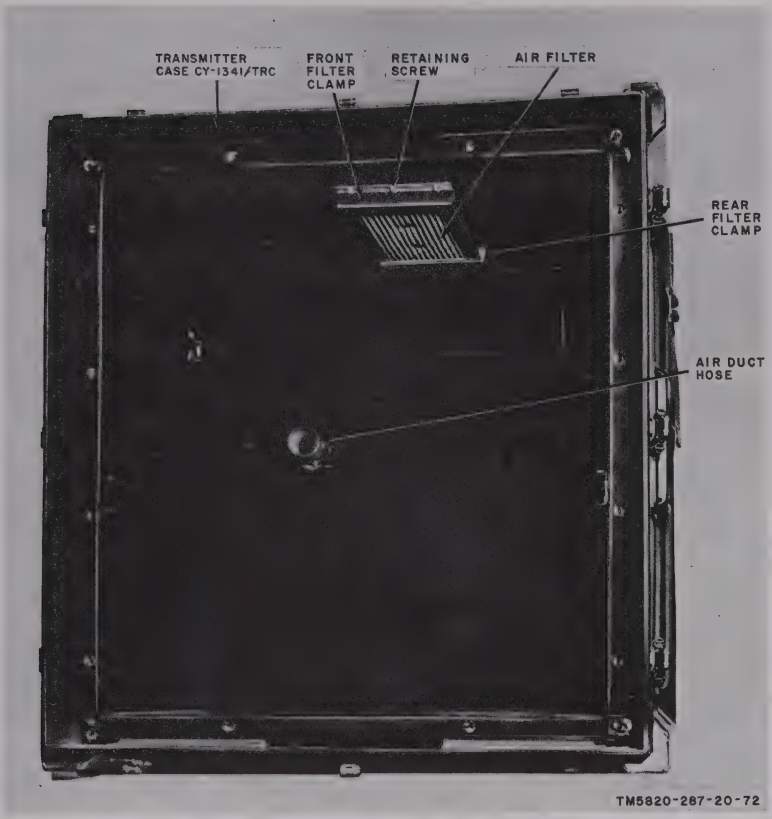
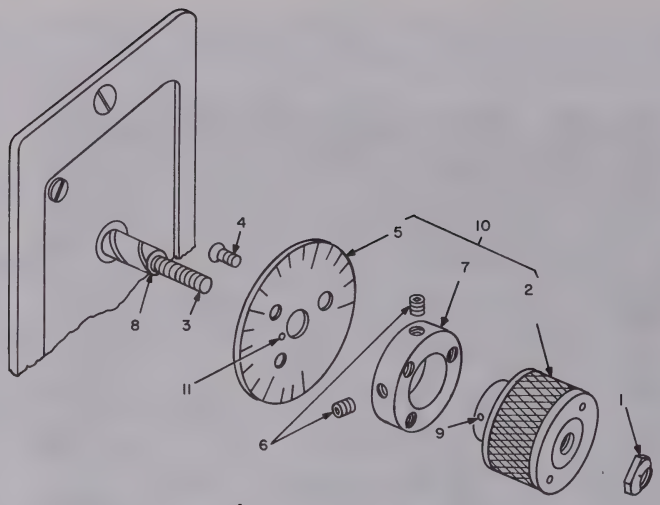
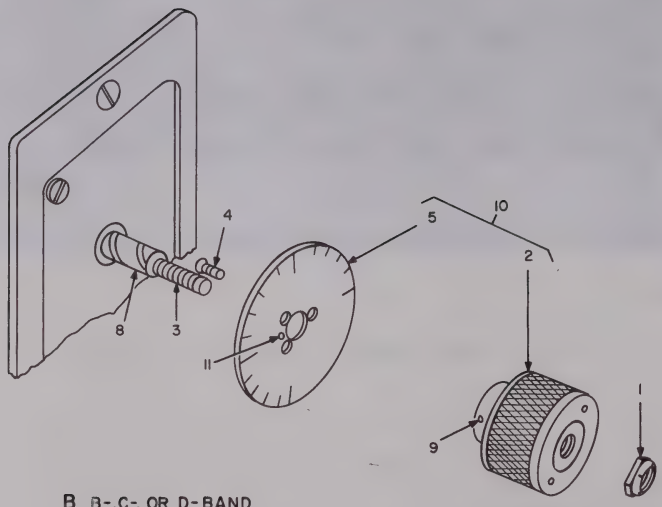


Figure 4–43. T–30²(*)/TRC carrying case, location of air filter, top inside view.



A. A BAND



B B-,C-, OR D-BAND

TM5820-287-20-74

Figure 4-44. Bandpass filter, exploded view of controls.

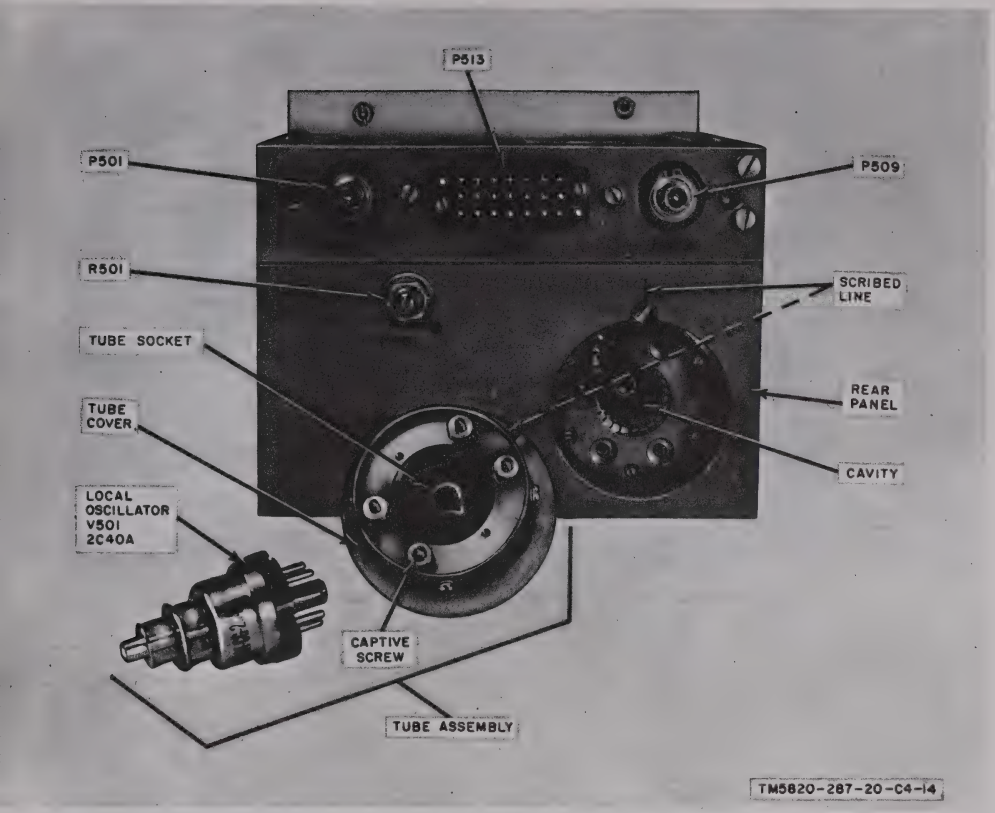


Figure 4–45. AM–3203A/TRC–24, replacement of tube V105, rear view.

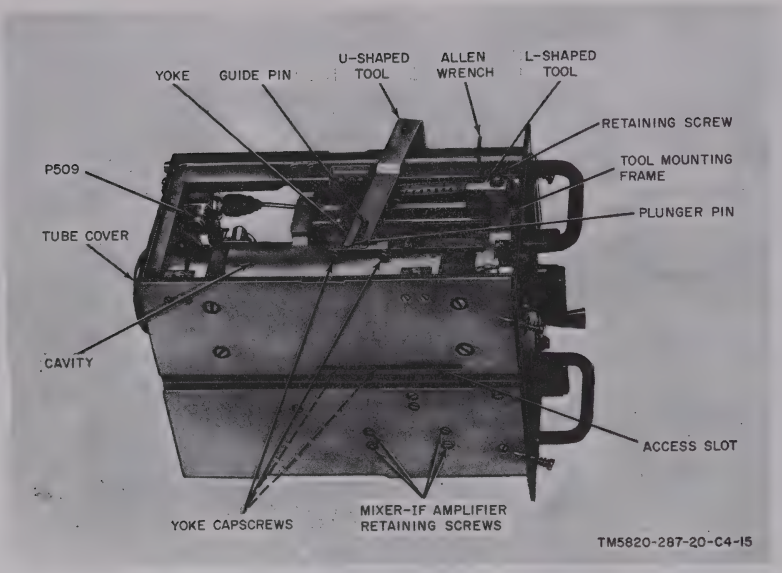


Figure 4–46. AM–3203A/TRC–24, tools installed for alignment.

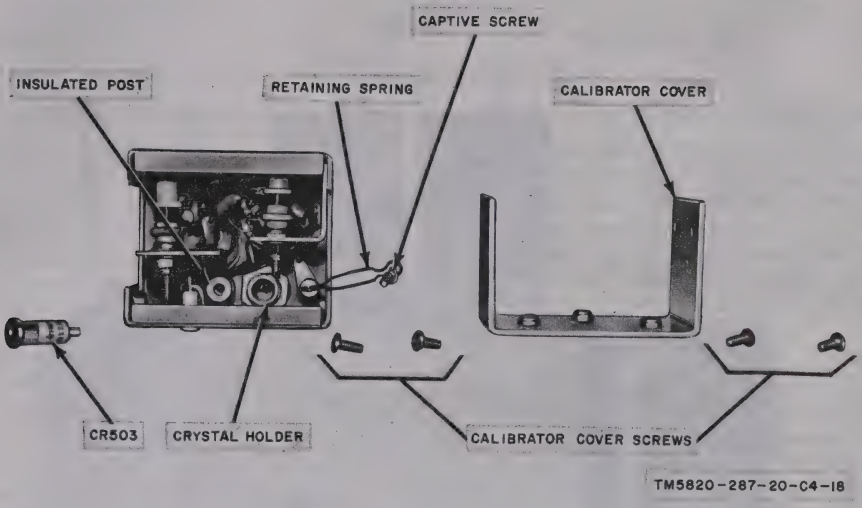


Figure 4-47. Calibrator (part of AM-3203A/TRC-24) crystal diode CR503 location.

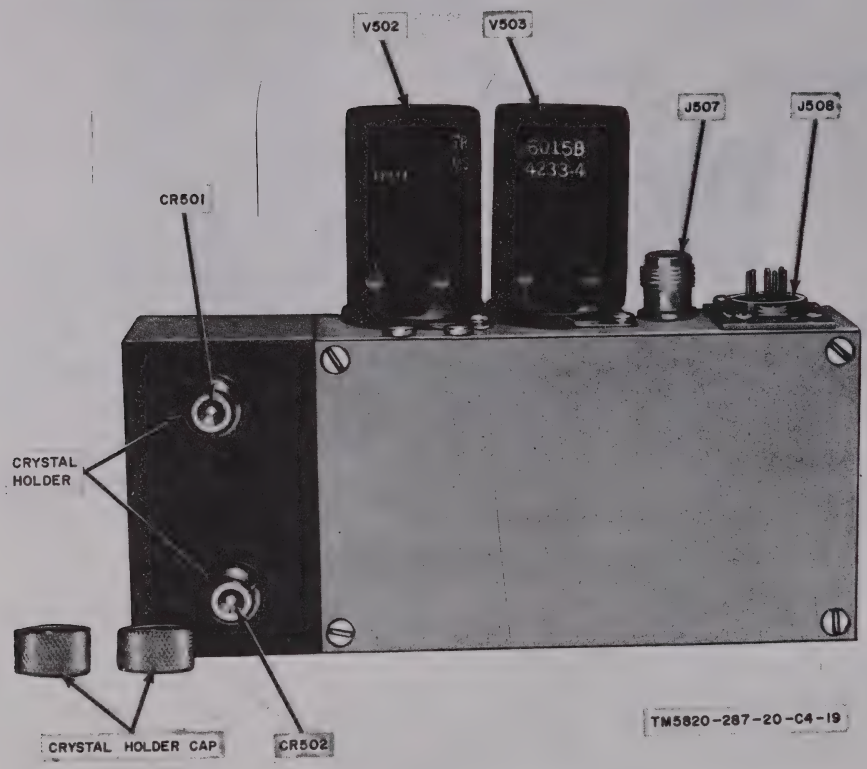


Figure 4-48. Mixer-IF amplifier (part of AM-3203A/TRC-24) crystal diodes CR501 and CR502 locations.

CHAPTER 5

AUXILIARY EQUIPMENT

5–1. Tower AB 216/U

The AB–216/U may be substituted for the mast assembly of Antenna Accessories Group OA–1398/GRC when the antennas must be installed higher than 50 feet above the ground. The height of the AB–216/U is approximately 78 feet (TM 11–5073).

5–2. Interoperation With British Wireless Set C–41

a. C–41 Transmitter. When the transmitter of the C–41 is used with Receiver, Radio R–417(*)/TRC in a four-channel carrier system, no modifications are necessary. When the transmitter of the C–41 is used with the R–417(*)/TRC in a 12-channel carrier system, modifications listed in either (1) or (2) below are required.

(1) An attenuation circuit must be substituted for the deemphasis circuit of the R–417(*)/TRC.

(2) An equalizer circuit that will provide a flat 5-decibel gain must be added to the output of the R–417(*)/TRC.

b. C–41 Receiver. When the C–41 receiver is used with Transmitter, Radio T–302(*)/TRC in a four-channel carrier system, the modification listed in (1) below is required. When the C–41 receiver is used with the T–302(*)/TRC in a 12-channel carrier system, the modifications in (1) and (2) below are required.

(1) Special crystals corresponding to the RF channel frequencies of the T–302(*)/TRC must be installed in the C–41 receiver.

(2) The preemphasis network in the T–302(*)/TRC must be removed.

5–3. Interoperation with Radio Set AN/GRC–50

a. General. The AN/GRC–50 may be interoperated with the radio equipment sets using either the AN/TRA–25 or AN/TRA–25A (F-band) or the OA–3668A/TRC–24 (J-band) equipments. When the AN/TRA–25 or AN/TRA–25A (F-band) or OA–3668A/TRC–25 (J-band) is operated with a radio equipment set at one terminal of a radio link, Radio Set AN/GRC–50 may be used at the other terminal of the radio link. When the radio equipment is interoperated with the AN/GRC–50, the baseband frequency of the AN/GRC–50 will accommodate 12 voice-frequency channels.

b. RF Channel Numbers. If the AN/TRA–25 or AN/TRA–25A (F-band) equipment is to be interoperated with the AN/GRC–50, odd channels 1 through 249 of the F-band equipment correspond to channels 189 through 363 of the AN/GRC–50. If the OA–3668A/TRC–24 (J-band) equipment is to be interoperated with the AN/GRC–50, channels 1 (low, scale A) through 250 (high, scale B) of the J-band equipment correspond to channels 400 through 899 of the AN/GRC–50. To determine the AN/GRC–50 receiver RF channel number when using the T–302(*)/TRC with the AN/TRA–25 or AN/TRA–25A (F-band) equipment, refer to *c* below. To determine the RF channel number of the R–417(*)/TRC with the AN/TRA–25 or AN/TRA–25A (F-band) equipment, when the AN/GRC–50 transmitter is tuned to a specific RF channel, refer to *d* below. To determine the AN/GRC–50 receiver RF channel number when using the T–302(*)/TRC with the OA–3668A/TRC–24 (J-band) equipment, refer to *e* below. To determine the RF channel number of the R–417(*)/TRC with the OA–3668A/TRC–24 (J-band) equipment, when the AN/GRC–50 transmitter is tuned to a specific RF channel number, refer to *f* below.

c. Determining AN/GRC–50 Receiver RF Channel Number (F-Band Operation).

Note. Only F-band (AN/TRA–25 or AN/TRA–25A) odd channels can be used for interoperation with the AN/GRC–50, since the frequency assignments for the even F-band RF channels are not the same as the frequency assignments for the RF channels of the AN/GRC–50.

(1) Determine the T–302(*)/TRC operating frequency from the F-band RF channel number (para 1–5*c*).

(2) Subtract 601.5 from the operating frequency ((1) above) to determine the AN/GRC–50 receiver RF channel number. An example follows:

(*a*) Assume that the T–302(*)/TRC (F-band operation) is tuned to RF channel 51 (F, low).

(*b*) Refer to paragraph 1–5*c* to determine the frequency assigned to the RF channel 51 (F, low). The frequency is 815.5 mcs.

(*c*) Subtract 601.5 from the assigned frequency in (*b*) above to obtain the AN/GRC–50 receiver RF channel number.

The result is:

815. 5
−601. 5

214. 0 (AN/TRC–50 receiver RF channel number is: 214)

d. Determining R–417(*)/TRC RF Channel Number (F-Band Operation).

Note. Only F-band (AN/TRA–25 or AN/TRA–25A) odd channels can be used for interoperation with the AN/GRC–50, since the frequency assignments for the even F-band RF channels do not correspond to the frequency assignments for the RF channels of the AN/GRC–50.

(1) Add 601.5 to the RF channel number to which the AN/GRC–50 transmitter is tuned.

(2) Refer to paragraph 1–5*c* to determine the RF channel number for the R–417(*)/TRC. An example follows:

(*a*) Assume that the AN/GRC–50 transmitter is tuned to channel 251.

(*b*) Add 601.5 to the RF channel number. The result is:

251. 0
+601. 5

852. 5 (R–417(*)/TRC receiver frequency must be 852.5 mcs).

(*c*) Refer to paragraph 1–5*c* to determine the R–417(*)/TRC RF channel number. The RF channel number is: 125 (F, low).

Note. J-band scale A channels should not be used for transmitting in interoperation with the AN/GRC–50. The lower modulation level of scale A channels makes it difficult to obtain the proper 68KC OUT reading on the R–114S(P)/GRC Multimeter.

e. Determining AN/GRC–50 Receiver RF Channel Number (J-Band Operation).

(1) Determine the T–302(*)/TRC operating frequency from the J-band channel number (para 1–5*d*).

(2) Subtract 950.5 from the operating frequency ((1) above) to determine the AN/GRC–50 receiver RF channel number. An example follows:

(*a*) Assume that the T–302(*)/TRC (J-band operation) is turned to RF channel 145 (low, scale B).

(*b*) Refer to paragraph 1–5*d* to determine the frequency assigned to RF channel 145 (low, scale B). The frequency is 1472.563 mcs.

(*c*) Subtract 950.5 from the assigned frequency given in (*b*) above to obtain the AN/GRC–50 receiver RF channel number. The result is:

1472. 563
−950. 5

522. 063

(*d*) Round off the result in (*c*) above to the nearest whole number to determine the AN/GRC–50 receiver RF channel number. (The AN/GRC–50 receiver RF channel number must be 522.)

Note. J-Band scale A channels should not be used for transmitting in interoperation with the AN/GRC–50. The lower modulation level of scale A channels makes it difficult to obtain the proper 68KC OUT reading on the R–114S(P)/GRC multimeter.

f. Determining R–417(*)/TRC RF Channel Number (J-Band Operation).

(1) Add 950.5 to the RF channel number to which the AN/GRC–50 transmitter is tuned.

(2) Refer to paragraph 1–5*d* to determine the RF channel number for the R–417(*)/TRC. An example follows:

(*a*) Assume that the AN/GRC–50 transmitter is tuned to channel 833.

(*b*) Add 950.5 to the RF channel number given in (*a*) above. The result is:

833
+950. 5

1783. 5 (R–417(*)/TRC receiver frequency must be 1783.5 mcs).

(*c*) Refer to paragraph 1–5*d* to determine the R–417(*)/TRC RF channel number. The RF channel number is: 67 (high, scale B).

Caution: **If the link is to be used with an increased setting of the T–302(*)/TRC INPUT ADJ control, *do not* set the T–302(*)/TRC MEASURE switch to 1 KC IN, MOD 1 KC IN, or MOD 68 KC IN. Setting the MEASURE switch to any of these positions may damage the MEASURE meter.**

g. Operation. When the radio equipment set is interoperated with the AN/GRC–50, the radio equipment set must be operated with the R–417(*)/TRC and T–302(*)/TRC controls positioned as follows:

(1) Operate the R–417(*)/TRC OUTPUT ADJ control to 11.

(2) Operate the T–302(*)/TRC INPUT ADJ control to 21.

CHAPTER 6

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

6-1. Disassembly

When disassembling the equipment and preparing for repackaging (para 6-2), refer to the table of components (para 1-6) to determine the components and parts that belong in particular carrying cases. To disassemble the radio terminal or radio repeater, proceed as follows.

a. Components.

(1) Disconnect all cables from the equipment (figs. 2-38, 2-39, 2-40, and 2-41).

(2) Place the receiver and transmitter tuning heads in their carrying cases and secure them by tightening the camlock fasteners.

(3) Place the bandpass filters in their carrying cases and secure them by tightening the camlock fasteners.

(4) Place the SA-331/U, J-532/U, ME-82/U, and the appropriate cables in Case, Accessories CY-1343/TRC.

(5) Place all of the cables, running spares, and the H-90/U in Case, Accessories CY-1342/TRC of the MK-133/TRC.

(6) Install the dummy filters in the T-302(*)/TRC and R-417(*)/TRC and secure them with the camlock fasteners.

(7) Push in the vibration mount (A, fig. 4-5) of the T-302(*)/TRC.

(8) Replace all covers on the carrying cases and secure them with the fasteners.

b. Antenna Assembly.

(1) Reverse the procedures given in paragraph 2-4*a* to disassemble the antenna assembly.

(2) Wind the CG-1030/U cables on Reel Cable RC-405/TRC (fig. 2-3).

(3) Place the mast sections in the mast case and the guy stakes in the guy stake carrying case.

(4) Coil all guy ropes and the block and tackle assembly and place them in Case, Accessories CY-1392/G.

(5) Wind all guy wires on the cable reels and place them in Case. Accessories CY-1392/G.

(6) Place the mast base, the gin pole cap, the guy plates, and the guy stake clamps in Case, Accessories CY-1392/G.

6-2. Repackaging

Refer to paragraph 2-2*a* to determine the contents of each packing case. Refer to paragraph 2-2*b* to repack the equipment.

6-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures outlined in paragraph 6-4 will be used to prevent further use of the equipment.

6-4. Methods of Destruction

a. If complete destruction of the equipment cannot be accomplished in the time available, destroy the following components in the order given.

(1) Transmitter, Radio T-302(*)/TRC.

(2) Receiver, Radio T-417(*)/TRC.

(3) Gasoline Engine Generator Set PU-286/G.

(4) Transmitter and receiver tuning heads.

(5) Antennas.

(6) Miscellaneous equipment.

b. Use any of the following methods to destroy the equipment.

(1) *Smash.* Smash the controls, tubes, coils, switches, capacitors, and meters; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

(2) *Cut.* Cut the power cords and transmission cables.

(3) *Burn.* Burn power cords, transmission cables, and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

(4) *Bend.* Bend panels, cases, and cabinets.

(5) *Explode.* If explosives are necessary, use firearms, grenades, or TNT.

Warning: **Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.**

(6) *Dispose of.* Bury or scatter the destroyed parts in slit trenches, foxholes, or throw them into streams.

APPENDIX A

REFERENCES

The following references are applicable for the operator of Radio Sets AN/TRC–24, AN/GRC–75, AN/GRC–78, AN/GRC–81 and AN/GRC–81A; Radio Terminal Sets AN/TRC–35, AN/GRC–76, AN/GRC–79 and AN/GRC–82; Radio Relay Set AN/TRC–36; Radio Repeater Sets AN/GRC–77, AN/GRC–80, and AN/GRC–83; and Radio Set Groups AN/TRA–25, AN/TRA–25A, and OA–3668A/TRC–24.

AR 70–10	Army Materiel Testing.
AR 320–5	Dictionary of United States Army Terms.
AR 320–50	Military Terms, Abbreviations, and Symbols: Authorized Abbreviations and Brevity Codes.
AR 700–58	Report of Packaging and Handling Deficiencies.
AR 750–5	Maintenance of Supplies and Equipment: Organization Policies, and Responsibilities for Maintenance Operations.
AR 750–10	Materiel Readiness (Serviceability of Unit Equipment).
DA Pam 108–1	Index of Army Films, Transparencies, GTA Charts, and Recordings.
DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
FM 21–5	Military Training Management.
FM 21–6	Techniques of Military Instructions.
FM 21–30	Military Symbols.
SIG 7&8 H–90/U	Handset H–90/U.
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11–486–6	Electrical Communication Systems Engineering: Radio.
TM 11–679	Fundamentals of Carrier and Repeater.
TM 11–2139–10	Operator's Manual: Terminals, Telephone AN/TCC–7 and AN/TCC–50.
TM 11–2142	Telephone Terminal AN/TCC–3 and Telephone Terminal AN/TCC–23.
TM 11–2150	Telephone Carrier Systems using Terminals, Telephone AN/TCC–7 and AN/TCC–50, Repeater, Telephone AN/TCC–8 (AN/TCC–21), Repeater, Telephone AN/TCC–11, and Telephone Test Set TS–712/TCC–11.
TM 11–5073	Towers AB–216/U and AB–216A/U; Tower Section Set AB–298/U, Guy Kit MK–99/U; Accessory Kit MK–100/U, and Guy Kit MK–101/U.
TM 11–5820–203–15	Organizational, DS, GS, and Depot Maintenance Manual: Repeater Set, Radio AN/MRC–54(V). Including Repair Parts and Special Tool Lists.
TM 11–5820–204–15	Operator, Organizational, Field and Depot Maintenance Manual: Radio Terminal Set AN/MRC–69(V). Including Repair Parts and Special Tool Lists.
TM 11–5820–517–12P	Operator and Organizational Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Antenna AT–903/G.
TM 11–5930–201–15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Switch Box SA–331/U.
TM 11–6115–204–10	Operator's Manual: Gasoline Engine Generator Sets PU–286A/G and PU–286B/G.

TM 11–6115–204–20	Organizational Maintenance Manual: Generator Sets, Gasoline Engine PU–286A/G and PU–286B/G.
TM 11–6115–204–35	Field and Depot Maintenance Manual: Generator Sets, Gasoline Engine PU–286A/G and PU–286B/G.
TM 38–750	Army Equipment Record Procedures.

APPENDIX B
BASIC ISSUE ITEMS LIST (BIIL) AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST (ITIAL)

Section I. INTRODUCTION

B-1. Scope

This appendix lists basic issue items and troop installed or authorized required by the crew/operator for installation, operation, and maintenance of Radio Sets AN/TRC-24, AN/GRC-75, AN/GRC-78, AN/GRC-81, and Radio Terminal Sets AN/TRC-35, AN/GRC-76, AN/GRC-79, and AN/GRC-82; Radio Relay Set AN/TRC-36; Radio Repeater Sets AN/GRC-77, AN/GRC-80, and AN/GRC-83.

B-2. General

This Basic Issue Items and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List—Section II. A list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

b. Items Troops Installed or Authorized List—Section III. A list, in alphabetical sequence, of items which, at the discretion of the unit commander, may accompany the end item, but are not subject to be turned in with the end item.

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Illustration. This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number.* Not applicable.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished with Equipment (Basic Issue Items Only). Indicates the quantity of the basic issue item furnished with the equipment.

h. Quantity Authorized (Items Troop Installed or Authorized Only). Indicates the quantity of the item authorized to be used with the equipment.

B-4. Special Information

Usable on codes are included in the description column. Uncoded items are applicable to all models. Identification of the usable on codes are as follows:

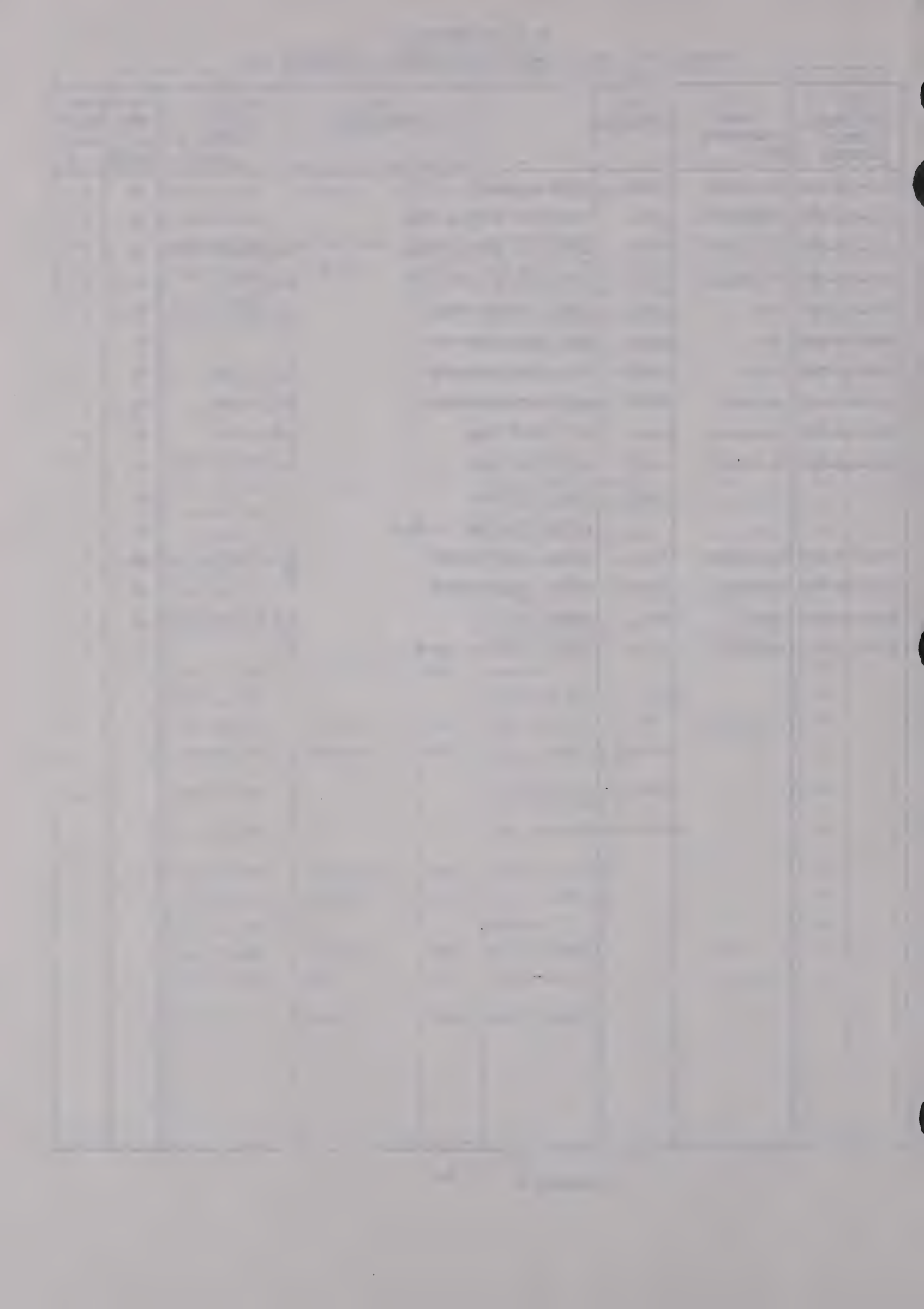
Code	*Used on*
1	AN/TRC-24
2	AN/TRC-35
3	AN/TRC-36
4	AN/GRC-75
5	AN/GRC-76
6	AN/GRC-77
7	AN/GRC-78
8	AN/TRC-79
9	AN/GRC-80
10	AN/GRC-81
11	AN/GRC-82
12	AN/GRC-83

SECTION II. BASIC ISSUE ITEMS LIST

(1) ILLUSTRATION (A) FIG. NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) FEDERAL STOCK NUMBER	(3) PART NUMBER	(4) FSCM	(5) DESCRIPTION	USABLE ON CODE	(6) UNIT OF MEAS	(7) QTY FURN WITH EQUIP
1-5		5820-395-8807	SC-D-66302	80063	CARRYING CASE, GUYSTAKE		EA	1
1-11		5820-856-9923			CASE CY-2592/GR	1,2,3,7,8,9	EA	2
1-11		5820-856-9912	CY-3622/TRA-25	97983	CASE ACCESSORIES	1,2,3,7,8,9	EA	1
1-14		5820-392-8075	SC-DL-64545	80063	CASE, ACCESSORIES CY-1344/TRC	4,5,6,7,8,9, 10,11,12	EA	1
1-17		5820-393-2030			CASE, ACCESSORIES CY-1342/TRC		EA	1
1-2		5820-397-8074			CASE, ACCESSORIES CY-1343/TRC		EA	1
					CASE, ACCESSORIES CY-3901/TRC-24		EA	1
1-5		5985-392-8078			CASE, ACCESSORIES CY-1392/G		EA	1
1-12		5820-776-5343			CASE, AMPLIFIER AND CONVERTER	1,2,3,7,8,9	EA	1
1-11					CY-2854/TRA-25		EA	1
1-16		5820-566-4914			CASE, ANTENNA CY-1761/GRC	7,8,9	EA	1
1-14		5820-566-4915	SC-D-62437	80063	CASE, ANTENNA CY-1760/GRC	4,5,6	EA	1
1-10		5820-776-5394			CASE, ANTENNA CY-2853/TRA-25	1,2,3,7,8,9	EA	2
1-7		5820-295-7125			CASE, ANTENNA CY-1371/TRC	1,2,3,7,8,9	EA	1
1-9		5820-264-7568			CASE, ANTENNA CY-1370/TRC	1,2,3,10.11,12	EA	1
1-4		5820-392-8076			CASE, ANTENNA REFLECTOR CY-1385/TRC	1,2,3,7,8,9, 10,11,12	EA	!
1-4		5820-392-8077			CASE, ANTENNA REFLECTOR SUPPORT CY-1387/TRC	1,2,3,7,8,9, 10,11,12	EA	1
1-5		5895-264-7564	SC-D-66321	80063	CASE, MAST		EA	3
1-17		5820-284-0357			CASE, POWER SUPPLY CY-1340/TRC		EA	1
1-1		5820-510-4759	SC-D-64650	80063	CASE, RECEIVER CY-1334/TRC	1,2,3,7,8,9, 10,11,12	EA	1
1-15		5820-504-7187	SC-D-66669	80063	CASE, STANDARDIZED COMPONENTS, ELECTRICAL CY-1338/TRC		EA	1
1-12		5820-392-8075			CASE STANDARDIZED COMPONENTS, ELECTRICAL CY-1344/TRC		EA	1
1-1, 1-17		5820-537-7899			CASE, TRANSMITTER CY-1341/TRC		EA	1
1-3		5975-224-5260	SC-D-14158	80063	GROUND ROD MD-148/G		EA	1
		5120-510-4046	GGG-H-86	81348	HANDLE, HAMMER HAND		EA	3
1-5		5120-224-4128			HAMMER HM-3		EA	1
		5340-276-7585	SC-C-62849	80063	STRAP, CARRYING	7,8,9	EA	1
1-2, 1-9		8465-275-5755	63052	80063	STRAP, CARRYING	1,2,3,7,8,9	EA	4
1-5		5340-533-5937	SC-B-6710	80063	STRAP, RETAINING			

SECTION III ITEMS TROOP INSTALLED OR AUTHORIZED LIST

(1) FEDERAL STOCK NUMBER	(2) PART NUMBER	(3) FSCM	(4) DESCRIPTION	USABLE ON CODE	(5) UNIT OF MEAS	(6) QTY AUTH
3940-292-0058	SC-P-66333	80063	BLOCK AND TACKLE		EA	1
5120-889-2008	6553-607026	97983	EXTRACTOR, ELECTRON TUBE		EA	1
5120-295-2699	SC-C-65015	80063	EXTRACTOR, ELECTRON TUBE	1,2,3,4,5,6,7,8,9	EA	1
5120-293-0808	B-1003-613	97983	EXTRACTOR, ELECTRON TUBE	1,2,3,7,8,9	EA	1
5120-240-5364	B-15	65814	HANDLE, SOCKET WRENCH	1,2,3,7,8,9,10,11, 12	EA	1
5120-729-6312	332	82973	KEY, SOCKET HEADSCREW		EA	1
5120-293-0195	S-060	08664	KEY, SOCKET HEADSCREW	1,2,3,7,8,9	EA	1
5120-827-2965	S-076-4	82973	KEY, SOCKET HEADSCREW	1,2,3,7,8,9	EA	1
5120-248-9670	B-1003-614	47983	KEY, SOCKET HEAD	1,2,3,7,8,9	EA	1
5120-244-9681	B-1003-615	97983	KEY, SOCKET HEAD	1,2,3,7,8,9	EA	2
	523	79409	LIGHT EXTENSION		EA	1
			SCREWDRIVER, FLAT TL-360/U		EA	1
5120-237-0977	GGG-W-641B	81348	SOCKET, SOCKET WRENCH	1,2,3,7,8,9,10,11, 12	EA	1
5120-189-7906	GGG-W-641	81348	SOCKET, SOCKET WRENCH		EA	1
5120-293-0157	6725B	65814	WRENCH, BOX	1,2,3,7,8,9,10,11, 12	EA	1
5120-277-1253	GGG-W-636	81348	WRENCH, OPEN END, FIXED		EA	1



APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Radio Set AN/TRC-24. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Not used.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Codes	*Maintenance Category*
C	Operator/crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in section III.

e. Remarks. Self explanatory.

C-3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and test equipment requirements chart are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal Stock number.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART (AN/TRC-24)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADIO SET AN/TRC-24													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693C/U AND REAL, CABLE RC-405/TRC													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI
	ANTENNA-FILTER GROUP OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO SET AN/GRC-75													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693C/U AND REEL, CABLE RC-405/TR													
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1390/GRC (A-BAND)								#					See Section VII, VIII
	ANTENNA-FILTER GROUP OA-1391/GRC (A-BAND)								#					See Section IX, X

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	RADIO SET AN/GRC-78													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1396/GRC (D-BAND)								#					See Section XIX, XX
	ANTENNA-FILTER GROUP OA-1397/GRC (D-BAND)								#					See Section XXI, XXII
	RADIO SET AN/GRC-81 AND AN/GRC-81A													
	RADIO SET GROUP OA-1387/GRC OR CA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	ANTENNA-FILTER GROUP OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO TERMINAL SET AN/TRC-35													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI
	ANTENNA-FILTER GROUP OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO TERMINAL SET AN/GRC-76													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1390/GRC (A-BAND)								#					See Section VII, XVIII

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	ANTENNA-FILTER GROUP OA-1391/GRC (A-BAND)								#					See Section IX, X
	RADIO TERMINAL SET AN/GRC-79													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1396/GRC (D-BAND)								#					See Section XIX, XX
	ANTENNA FILTER GROUP OA-1397/GRC (D-BAND)								#					See Section XXI, XXII
	RADIO TERMINAL SET AN/GRC-82													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI
	ANTENNA-FILTER GROUP OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO RELAY SET AN/TRC-36													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI
	ANTENNA-FILTER OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO REPEATER SET AN/GRC-77													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693C/U AND REEL, CABLE RC-405/TR													
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	AMPLIFIER GROUP OA-1390/GRC (A-BAND)								#					See Section VII, VIII
	ANTENNA-FILTER GROUP OA-1391/GRC (A-BAND)								#					See Section IX, X
	RADIO REPEATER SET AN/GRC-80													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXVIII, XXIV
	AMPLIFIER GROUP OA-1392/GRC (B-BAND)								#					See Section XI, XII
	ANTENNA-FILTER GROUP OA-1393/GRC (B-BAND)								#					See Section XIII, XIV
	AMPLIFIER GROUP OA-1396/GRC (D-BAND)								#					See Section XIX, XX
	ANTENNA-FILTER GROUP OA-1397/GRC (D-BAND)								#					See Section XXI, XXII
	RADIO REPEATER SET AN/GRC-83													
	RADIO SET GROUP OA-1387/GRC OR OA-1387A/GRC								#					See Section III, IV
	POWER ACCESSORIES GROUP OA-1676/GRC								#					See Section XXV, XXVI
	CABLE ASSEMBLY, POWER, ELECTRONICAL CX-2251/U AND								#					See Section XXXI, XXXII
	CX-4693C/U AND REEL, CABLE RC-405/TR													
	ANTENNA GROUP OA-1389/GRC								#					See Section V, VI

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRC-24 (Continued)													
	ANTENNA ACCESSORIES GROUP OA-1398/GRC								#					See Section XXIII, XXIV
	AMPLIFIER GROUP OA-1394/GRC (C-BAND)								#					See Section XV, XVI
	ANTENNA-FILTER GROUP OA-1395/GRC (C-BAND)								#					See Section XVII, XVIII
	RADIO SET GROUP AN/TRA-25, AN/TRA-25A, TRA-25B								#					See Section XXIX, XXX
	RADIO SET GROUP OA-3668A/TRC-24								#					See Section XXVII, XXVIII
														#Indicates that maintenance guidance will be found in the sections in this manual that are referenced in the remarks column.

SECTION III. MAINTENANCE ALLOCATION CHART (OA-1387/GRC and OA-1387A/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADIO SET GROUP OA-1387/GRC and OA-1387A/GRC				C								5	Adjustment of PP-685/TRC; R-417/TRC; and T-302/TRC for tune-up
										C				Replace indicator lamp or fuse
		O												Inspect front panel controls
			O										4,22	Test Electron Tubes
										O			9	By replacement of Cable Assemblies; Handset H-90/U; Light, Extension; Lamp, Incandescent in Accessory Kit MK-133/TRC. Also replace Filter, Air; Fan, Centrifugal; Hose, Air Duct
										F			10, 11	By replacement of defective components isolated by testing. RF cables and connectors except for a few connectors in R-417 and T-302/TRC
			F										6, 7, 8, 18, 19, 22	Voltage and resistance measurements or signal substitution to isolate defective components
					H								7	Adjust the OVER TRIP ADJ CUR control
						H							2, 6, 8, 12, 13, 14, 15, 17, 18, 19	Align component chasis in R-417 and T-302
			H										6, 7, 8, 15, 18, 19, 20, 21, 22, 24, 25, 26, 27	To meet the performance standards of PP-685, R-417, and T-302
										H			10, 11	All repairs
			D										7, 8, 12, 13, 16, 17, 19, 23, 24, 28	Complete testing with the dummy load or tuning head
												D		Includes Crystal Unit CR-18/U; Ammeter; AC Motor; Directional Coupler; and Case

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1387/GRC and OA-1387A/GRC (Continued)													
	POWER SUPPLY PP-685/TRC									C				Replace indicator lamp
		O												Circuit breakers, switches, and other front panel controls
										O			9	Minor repairs or replacement of fuse, tube, air filter, knob
			F										6, 7, 8, 22	Short circuit test and voltage and resistance measurements. Includes testing of the blower motor
										F			10, 11	By replacement of defective component isolated in testing, including the circulating fan
										H			10, 11	All repairs
			H										6, 7, 8, 21, 22	To meet the performance standards of PP-685/TRC
					H								7	Adjust the OVER TRIP ADJ CUR control
			D										8	Complete test with a specially fabricated dummy load
												D		Includes Case, Power Supply CY-1340/TRC
	TRANSFORMER, POWER, FIXED AUTO TRANSFORMER TF-167/TRC									C				Replace defective fuse
										O			9	Minor repairs or replacement of Cap, Electrical; Chain Assembly, Single; Cover, Access; Cover, Electrical, Connector; Fuse, Cartridge; Knob; Strap, Carrying
										F			10, 11	By replacement of all maintenance parts except chest handle
										H			10, 11	All repairs
			H										7, 22, 26	Voltage output and Continuity
												D		Tests

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1387/GRC and OA-1387A/GRC (Continued)													
	RECEIVER RADIO R-417/TRC									O			1, 3, 9	Minor repairs or replacement of arrester, lightening; cap, electrical; tube, electron; fan; filter, air; lamp
			F										6, 7, 8, 18, 19, 22	By voltage and resistance measurements or signal substitution in component chassis of R-417, excluding the tuning head. Also includes tests of filters, coupling networks, IN69 diodes, and circulating fan.
										F			10, 11	By replacement of defective components isolated by testing
										H			10, 11	All repairs
						H							2, 6, 14, 18	Alignment of calibrator; IF amplifier; Limiter, Discriminator, and AFC chassis
			H										6, 7, 8, 15, 18, 19, 20, 22, 25, 26	Test the Component chassis in R-417 excluding the tuning head.
			D										7, 8, 12, 13, 17, 19, 23, 26	Complete test requires B-band receiver tuning head, AM-913( )/TRC. All tests performed in a screened room.
												D		Includes Crystal unit CR-18/U and Case, receiver CY-1339/TRC
	TRANSMITTER, RADIO T-302/TRC									C				Replace the defective lamp in LOW PWR ALARM indicator
					C								5	Adjust the front panel controls and the main assemblies for tune-up of T-302/TRC
			O										4, 22	Test electron tubes
										O			3, 9, 22	By replacement of Fan, Blower Motor; Tube, Electron; Crystal Unit, Quartz; Hose, Air Duct; Air Filter; Shield, Electron Tube

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1387/GRC and OA-1387A/GRC (Continued)													
	TRANSMITTER, RADIO T-302/TRC (Continued)		F										6, 7, 8, 18, 19, 22	By voltage and resistance measurements of, or signal substitution in, component chassis of T-302 excluding tuning head. Includes tests of Filters; Coupling Networks; IN69 Diodes; AFC and Blower Motors.
										F			10, 11	By replacement of defective circuit components isolated by above test
										H			10, 11	All repairs
						H							6, 8, 12, 13, 14, 15 17, 18, 19	Alignment of component chassis in T-302, excluding the tuning head
			H										6, 8, 15, 19, 22, 24, 25, 26, 27	Testing component chassis in T-302, excluding the tuning head
			D										8, 16, 19, 23, 24, 27, 28	One of the transmitter tuning head required for a complete testing of T-302.
												D		Includes Ammeter; AC motor; Directional Coupler; and Case CY-1341/TRC

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE OA-1387/GRC and OA-1387A/GRC (continued)	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O,F,H,D	ALLEN WRENCHES		
2	O,F,H,D	ALIGNMENT TOOL		
3	O,F,H,D	TUBE PIN STRAIGHTENERS		
4	O	TEST PROD	6625-510-1841	
5	C	SCREWDRIVER TL-358/U		
6	F,H	MULTIMETER ME-26/U	6625-360-2493	
7	F,H,D	MULTIMETER TS-352/U	6625-242-5023	
8	F,H,D	VOLTMETER, ELECTRONIC ME-30/U	6625-643-1670	
9	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
10	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
11	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
12	H,D	FREQUENCY METER AN/URM-80	6625-649-4286	
13	H,D	FREQUENCY METER AN/URM-81	6625-539-9910	
14	H	FREQUENCY METER AN/USM-159	6625-892-5360	
15	H	FREQUENCY METER AN/USM-207	6625-911-6368	
16	D	FREQUENCY METER AN/TSM-16	6625-542-1666	
17	F,H,D	SIGNAL GENERATOR AN/URM-70	6625-519-2104	
18	F,H	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
19	F,H,D	SIGNAL GENERATOR SG-71/FCC	6625-669-0255	
20	H	SIGNAL GENERATOR AN/URM-48	6625-553-1178	
21	H	TEST SET I-199		
22	O,F,H	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	

TOOL AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		OA-1387/GRC and OA-1387A/GRC (Continued)		
23	D	TEST SET, TELEPHONE AN/USM-181	6625-740-0344	
24	H	METER, MODULATION ME-57/U	6625-647-3737	
25	H	ANALYZER, SPECTRUM TS-723/U	6625-668-9418	
26	H,D	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
27	H	WATTMETER AN/URM-120	6625-813-8430	
28	O,F,H,D	WATTMETER ME-82/U	6625-511-4397	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA GROUP OA-1389/GRC							C					1,2,3	
										O			1,2,3,4	Minor repairs or replacement of total unit or piece parts except Handle, Chest; and Catch, Luggage
										F			5,6	By replacing all maintenance parts except Catch, Luggage
										H			5,6	By replacing all maintenance parts.
										D			5,6	All repairs
												D		

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	C,O	WRENCH BOX	5120-293-0157	
2	C,O	WRENCH, OPEN END, FIXED	5120-277-1253	
3	C,O	SOCKET, SOCKET WRENCH	5120-227-6704	
4	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
5	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
6	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AMPLIFIER GROUP OA-1390/GRC									O			1	By replacing handle, Chest part of Case CY-1338/TRC; and parts listed below for AM-1179/GRC and AM-1180/GRC
			F										4,5,8,14	Test for tuning heads including the AFC motor B1
										F			2,3	By replacing Catch, Luggage part of Case CY-1338/TRC; and maintenance parts listed below for each tuning head
										H			2,3	By replacing all maintenance parts
					H								9,10,11	AM-1179/GRC only
			H										5,7,9,12,13	Tuning heads
			D										6,8,9,14	Tuning heads
	AMPLIFIER-CONVERTER AM-1179/GRC									O			1	By replacing Electron Tube; RF Cable Assembly; Knob; Shield, electron tube
			F										4,5,8	By Voltage and resistance measurements and signal substitution. Also test the AFC motor B1
										F			2,3	By replacing cables; Connectors; the AFC motor B1; and defective parts isolated by testing
										H			2,3	By replacing all maintenance parts
						H							9,10,11	Local Oscillator and RF Amplifier tracking
			H										5,7,9,12	Requires the dummy filter and Receiver R-417( )/TRC
			D										6,8,9	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1390/GRC (Continued)													
	AMPLIFIER, RADIO FREQUENCY AM-1180/GRC									O			1	By replacing Electron Tube; RF Cable Assembly; Window, Dial
			F										4,14	Voltage and Resistance measurement of Power Amplifier Tube V1
										F			2,3	By replacing all maintenance parts except Socket, Electron Tube; Capacitor Assembly for output coupling
										H			2,3	By replacing all maintenance parts
			H										12,13	Requires Power Supply PP-685( )/TRC
			D										6,14	

SECTION VIII. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1390/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	F	MULTIMETER ME-26/U	6625-360-2493	
5	F,H	MULTIMETER TS-352/U	6625-242-5023	
6	D	FREQUENCY METER AN/URM-80	6625-649-4286	
7	H	COUNTER, ELECTRONIC, DIGITAL READOUT AN/USM-207	6625-911-6368	
8	F,D	SIGNAL GENERATOR AN/URM-70	6625-519-2104	
9	H,D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
10	H	SWEEP GENERATOR SG-92/U	6625-546-6662	
11	H	OSCILLOSCOPE AN/USM-140	6625-987-6603	
12	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
13	H	WATTMETER AN/URM-120	6625-813-8430	
14	F,D	WATTMETER ME-82/U	6625-511-4397	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA FILTER GROUP OA-1391/GRC							C		O			1	Antenna AS-756/GRC By replacement of all maintenance parts except Catch, Luggage; Gear, Spur; Knob; Ring, Retaining; and Stud Assembly, Turnlock Fastener
										F			2,3	By replacement of all maintenance parts
			H										4,5,6,7,8	Test of A-Band Bandpass Filters F-238/U thru F-243/U only
							H						6	Receiver R-417( )/TRC required to calibrate the Bandpass Filters
			D										6	Bandpass Filters only

SECTION X. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1391/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	H	FREQUENCY METER AN/URM-80	6625-649-4286	
5	H	FREQUENCY METER TS-186D/UP	6625-556-1916	
6	H,D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
7	H	VOLTMETER, ELECTRONIC ME-30B/U	6625-643-1670	
8	H	DEVICE, SEMICONDUCTOR, DIODE MX-3671/U	6625-964-9248	

SECTION XI. MAINTENANCE ALLOCATION CHART (OA-1392/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AMPLIFIER GROUP OA-1392/GRC		O		C					O			15 13 1	Front panel controls Test electron tubes By replacing defective tubes or minor repairs or replacement of catch, handle, or strap, part of Case CY-1338/TRC
										F			13,14	By replacing circuit components found defective by voltage and resistance measurements and connectors, cables, and the AFC motor
			F										4,5,8	Voltage and resistance measurements of tuning heads and signal substitution in AM-913/TRC. Also test the AFC motor B1
			H			H				H			5,7,9,12,14 9,10,11 2,3	Test each tuning head AM-913/TRC only All repairs except adapter, assembly contact; clutch, friction; window, dial; and some RF coils in AM-913/TRC
			D							D		D	2,3 6,8,9	All repairs All tests

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1392/GRC (Continued)													
	AMPLIFIER, RADIO FREQUENCY AM-912/TRC; AM-912A/TRC				C								15	Adjust the front panel controls for tune-up procedures
			O										13	Test tube V1
										O			1	By replacing Electron Tube V1; fastener, stud; or knobs
			F										4	By voltage and resistance measurement of Power Amplifier Tube V1
										F			2,3	Replace defective circuit elements isolated by above test and Connectors J1,P1,P3, and P4
			H										12,14	Test AM-912( )/TRC installed in the transmitter with a dummy filter
										H			2,3	All repairs except adapter, assembly contact
										D			2,3	All repairs
			D										6	
												D		

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1392/GRC (Continued)													
	AMPLIFIER-CONVERTER AM-913/TRC				C								15	Adjust the front panel controls for tune-up procedures
										O			1	Replace defective tube and tube shield
			F										4,5,8	By voltage and resistance measurements and signal substitution. Also test the AFC motor B1
										F			2,3	Replace defective circuit components isolated by above test and defective cable W1,W3, or W4 and defective connectors P1,P2, J1,J2,P3, or P4
										H			2,3	All repairs except clutch, friction; RF coils L3,L4,L5,L10, and L13; window, dial; AFC Motor B1
						H							9,10,11	By local Oscillator and RF Amplifier tracking
			H										5,7,9,12	Test with the dummy filter installed in R-417( )/TRC
			D										6,8,9	All tests
										D			2,3	All repairs
												D		

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105( )/G	5180-610-8177	
4	F	MULTIMETER ME-26/U	6625-360-2493	
5	F,H	MULTIMETER TS-352/U	6625-242-5023	
6	D	FREQUENCY METER AN/URM-81	6625-539-0091	
7	H	FREQUENCY METER AN/USM-207	6625-911-6368	
8	F,D	SIGNAL GENERATOR AN/URM-70	6625-519-2104	
9	H,D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
10	H	SWEEP GENERATOR SG-92/U	6625-546-6662	
11	H	OSCILLOSCOPE AN/USM-140	6625-987-6603	
12	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
13	O	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	
14	H	WATTMETER AN/URM-120	6625-813-8430	
15	C	WATTMETER, RF ME-82/U	6625-511-4397	

SECTION XIII. MAINTENANCE ALLOCATION CHART (OA-1393/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA FILTER GROUP OA-1393/GRC									O			1	By replacement of cable assembly; Connector UG-643/U; all maintenance parts but connect, receptacle, electrical in AT-412/TRC; and handle, chest; fastener, stud; strap, carrying; filter, bandpass in MK-123/TRC
										F			2,3	By replacement of all maintenance parts except connector, receptacle, electrical in MK-123/TRC
										H			2,3	By replacement of all maintenance parts
							H						6	Calibration of the Bandpass Filters F-192/U thru F-197/U
			H										4,5,6,7,8	Test of Bandpass Filters
	ANTENNA AS-639/TRC,									O			1	By replacement of cable assembly, radio frequency CG-1042/U; connector, adapter UG-643/U; antenna element; bracket; cap, electrical
										F			2,3	By replacing all maintenance parts
	ANTENNA DIPOLE AT-412/TRC									O			1	By replacement of all maintenance parts except RF Cable Connectors
										F			2,3	Replace all maintenance parts
	CABLE ASSEMBLY, RADIOFREQUENCY CG-1042/U									O				Replace entire cable
										F			2,3	By replacement of RF Cable or Connector

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	(OA-1393/GRC (Continued)													
	FILTER KIT MK-123/TRC									O			1	By replacing handle, chest; fastener, stud; filter, bandpass; or strap carrying
										F			2,3	By replacing catch, luggage; or washer, split rim
										H			2,3	By replacing all maintenance parts
							H						6	
			H										4,5,6,7,8	

SECTION XIV. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1393/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	H	FREQUENCY METER AN/URM-80	6625-649-4286	
5	H	FREQUENCY METER TS-186D/UP	6625-556-1916	
6	H	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
7	H	VOLTMETER, ELECTRONIC ME-30B/U	6625-643-1670	
8	H	DEVICE, SEMICONDUCTOR, DIODE MX-3671/U	6625-964-9248	

SECTION XV. MAINTENANCE ALLOCATION CHART (OA-1394/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AMPLIFIER GROUP OA-1394/GRC		O							O			10 1	Test electron tubes By replacing maintenance parts in AM-914/TRC; AM-915( )/TRC; and case, standard components CY-1338/TRC
										F			2,3	By replacing maintenance parts in AM-914/TRC and AM-915( )/TRC
			F										4,5	By voltage and resistance measurements of component tubes
			H										7,9,11,12,13	
							H							AM-914/TRC only
										H			2,3	By replacing all maintenance parts except adapter, assembly contact in AM-915( )/TRC
										D			2,3	All repairs
			D										8,14	All tests
												D		Case, standard components CY-1338/TRC

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1394/GRC (Continued)													
	AMPLIFIER-CONVERTER AM-914/TRC		O										10	Test electron tubes
										O			1	By replacing electron tube and shield, electron tube
										F			2,3	By replacing all maintenance parts except coils, radio-frequency (other than L20 and L22); gear, bevel; insulator, feedthru
			F										5	By voltage and resistance measurements of V1,V2,V3,V4,V5 and test of the AFC Motor B1
			H										7,9,11,12	Install the AM-914/TRC and the dummy filter in R-417( )/TRC
							H							By RF Amplifier and Local Oscillator tracking
										H			2,3	By replacing all maintenance parts
			D										6,7,8	All tests
	AMPLIFIER-MULTIPLIER, RADIOFREQUENCY AM-915/TRC; AM-915A/TRC		O										10	Electron tubes
										O			1	By replacing electron tube; extractor, electron tube; fastener, stud; and knob
			F										4	By resistance measurements on Multiplier and Power Amplifier Tubes V1 and V2
										F			2,3	By replacing defective connectors; resistors; capacitors isolated by the test
			H										11,13	The dummy filter required
										H			2,3	By replacement of all maintenance parts except adapter, assembly contact
										D			2,3	All repairs
			D										8,14	All tests

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1394/GRC (Continued)													
	CASE, STANDARD COMPONENTS CY-1338/TRC									O		D	1	By replacing catch, luggage; handle, chest; strap, webbing

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105( )/G	5180-610-8177	
4	F	MULTIMETER ME-26/U	6625-360-2493	
5	F	MULTIMETER TS-352B/U	6625-242-5023	
6	D	SIGNAL GENERATOR AN/URM-70	6625-519-2104	
7	H,D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
8	D	FREQUENCY METER AN/URM-81	6625-539-9910	
9	H	FREQUENCY METER AN/USM-207	6625-911-6368	
10	O	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	
11	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
12	H	COMPARATOR, FREQUENCY CM-77( )/USM		
13	H	WATTMETER AN/URM-120	6625-813-8430	
14	D	WATTMETER ME-82( )/U	6625-511-4397	

SECTION XVII. MAINTENANCE ALLOCATION CHART (OA-1395/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA FILTER GROUP OA-1395/GRC							C						Antenna AS-640/TRC
										O			1	By replacing cable assembly, radiofrequency CG-1042/U; connector, Adapter UG-643/U; fastener, stud; filter, bandpass; and all maintenance parts except connectors in AT-413/TRC and MK-124/TRC; and dial, scale
										F			2,3	By replacing all maintenance parts except connector and dial, scale in MK-124/TRC
										H			2,3	By replacing all maintenance parts except dial, scale
							H						4	Calibrate bandpass filters F-199/U thru F-204/U
			H										4,5,6,7	Test of bandpass filters only
										D			2,3	All repairs
	ANTENNA AS-640/TRC									O			1	By replacing cable assembly, radiofrequency CG-1042/U; connector, Adapter UG-643/U; and all maintenance parts except Connector UG-571/U
										F			2,3	By replacing all maintenance parts

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1395/GRC (Continued)													
	ANTENNA DIPOLE AT-413/TRC							C						
										O			1	By replacement of all maintenance parts except connector, receptacle, electrical UG-571/U
										F			2,3	By minor repairs or replacement of all maintenance parts
	CABLE ASSEMBLY, RADIOFREQUENCY CG-1042/U									O				Replace entire cable
										F			2,3	By replacing RF Cable or Connector
	FILTER KIT MK-124/TRC									O			1	By replacing fastener, stud; filter, bandpass
										F			2,3	By replacing washer, split rim
										H			2,3	By replacing all maintenance parts except dial, scale
							H						4	
			H										4,5,6,7	
										D			2,3	All repairs

SECTION XVIII. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1395/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105( )/G	5180-610-8177	
4	H	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
5	H	FREQUENCY METER TS-186D/UP	6625-556-1916	
6	H	VOLTMETER, ELECTRONIC ME-30B/U	6625-643-1670	
7	H	DEVICE, SEMICONDUCTOR, DIODE MX-3671/U	6625-964-9248	

SECTION XIX. MAINTENANCE ALLOCATION CHART (OA-1396/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AMPLIFIER GROUP OA-1396/GRC		O										10	Test electron tubes
										O			1	By replacing electron tube; knob; some ring, retaining; and other organizational maintenance parts
										F			2,3	By replacing all maintenance parts except dial, control; probe and tubing assembly
			F										4,5,8,13	By voltage and resistance measurements and signal substitution
										H			2,3	All repairs
						H								AM-1177/TRC only
			H										5,7,8,11,12	Tuning heads
			D										6,8,9,13	Tuning heads
	AMPLIFIER-CONVERTER AM-1177/GRC		O										10	Test electron tubes
										O			1	By replacing electron tube; heat exchanger, electron tube; insert, knob; ring, retaining; shield, electron tube; and washer, keyway
										F			2,3	By replacing all maintenance parts except dial control
			F										4,5,8	By voltage and resistance measurements and signal substitution. Also test the AFC motor B1
										H			2,3	All repairs
						H							8	Local oscillator and RF Amplifier tracking
			H										5,7,8,11	Requires the dummy filter and R-417( )/TRC
			D										6,8,9	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-1396/GRC (Continued)													
	AMPLIFIER-MULTIPLIER, RADIOFREQUENCY AM-1178/GRC		O										10	Test electron tubes
										O			1	By replacing electron tube; extractor, electron tube; and knob
										F			2,3	By replacing all maintenance parts except probe and tubing assembly
			F										4,13	By resistance measurements of multiplier and power amplifier tubes and by watching indications on equipment meters
										H			2,3	All repairs including multiplier and power amplifier cavity assemblies
			H										11,12	Requires PP-685( )/TRC
			D										6,13	
	CASE, STANDARDIZED COMPONENTS, ELECTRICAL CY-1338/TRC									O			1	Handle, chest
										F			2,3	Catch, luggage
										D				All repairs

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	F	MULTIMETER ME-26/U	6625-360-2493	
5	F,H	MULTIMETER TS-352( )/U	6625-242-5023	
6	D	FREQUENCY METER TS-186( )/UP	6625-556-1916	
7	H	COUNTER, ELECTRONIC, DIGITAL READOUT AN/USM-207	6625-911-6368	
8	F,H,D	SIGNAL GENERATOR AN/URM-49	6625-669-5131	
9	D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
10	O	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	
11	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
12	H	WATTMETER AN/URM-120	6625-813-8430	
13	F	WATTMETER ME-82( )/U	6625-511-4397	

SECTION XXI. MAINTENANCE ALLOCATION CHART (OA-1397

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA FILTER GROUP OA-1397/GRC							C		O			1	Antenna AS-755/GRC By replacement of all maintenance parts except bushing, rubber; gasket; catch, luggage; handle, chest; connector, receptacle, electrical; ring, retaining; and stud assembly, turnlock fastener
										F			2,3	By replacement of all maintenance parts
			H										4,5,6,7,8	Test of D-Band bandpass filters F-233/U thru F-236/U only
							H						4	Receiver R-417( )/TRC required to calibrate the Bandpass Filters
			D										4	Bandpass Filters only

SECTION XXII. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1397/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	H,D	SIGNAL GENERATOR AN/URM-49	6625-669-5131	
5	H	SIGNAL GENERATOR SG-71/FCC	6625-669-0255	
6	H	FREQUENCY METER TS-186D/UP	6625-556-1916	
7	H	VOLTMETER, ELECTRONIC ME-30B/U	6625-643-1670	
8	H	DEVICE, SEMICONDUCTOR, DIODE MX-3671/U	6625-964-9248	

SECTION XXIII. MAINTENANCE ALLOCATION CHART (OA-1398/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA ACCESSORIES GROUP OA-1398/GRC									O				By replacement of all major piece parts. No tool required
			F										1	Continuity test of Cable Assembly CG-1030A/U
										F			2,3	By replacement of Cable, radio-frequency, RG-14A/U and connector, plug, electrical UG-707/U
										H			2,3	By replacement of catch, luggage
										D			2,3	All repairs
												D		

SECTION XIV. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1398/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	F	MULTIMETER ME-26/U	6625-360-2493	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	

SECTION XXV. MAINTENANCE ALLOCATION CHART (OA-1676/GRC)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	POWER ACCESSORIES GROUP OA-1676/GRC									C				By replacing entire Cable Assembly or 10 amp Fuse in J-532/U
										O			2	By replacing clamp, screw, quick adjustable; fastener, stud; strap, carrying; and some parts in J-532/U and SA-331/U
										F			3,4	By replacing all maintenance parts in both J-532/U and SA-331/U and replacing all connectors but connector, plug, Electrical UG-573
			F										1	Continuity checks of J-532/U and SA-331/U
										H			3,4	All repairs
	CABLE ASSEMBLY, RADIOFREQUENCY OR CABLE ASSEMBLY, SPECIAL PURPOSE								C					Replace with spare cable assemblies
										F			3,4	By replacement of connectors except connector, plug, Electrical UG-573
										H			3,4	By replacement of all connectors and cables, special purpose, electrical
	INTERCONNECTING BOX J-532/U									C				By replacing 10 amp Fuse, cartridge
										O			2	By replacing cap, electrical; fuse, cartridge; and strap, retaining
										F			3,4	By replacing all maintenance parts
			F										1	Continuity checks

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA1676/GRC (Continued)													
	SWITCH BOX SA-331/U									O			2	By replacing knob; strap, carrying
										F				By replacing all maintenance parts
			F										1	Continuity checks
	WATTMETER ME-82/U									#				See TB SIG 299
														#Indicates that maintenance guidance will be found in documents referenced in remarks column

SECTION XXVI. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-1676/GRC)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	F	MULTIMETER ME-26( )/U	6625-360-2493	
2	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
3	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
4	F,H	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	

SECTION XXVII. MAINTENANCE ALLOCATION CHART (OA-3668A/TRC-24)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADIO SET GROUP OA-3668A/TRC-24		O		O	O							12	Test electron tubes Front panel controls Align O-902, O-903, or O-904/TRC-24
										O			9	By replacement of defective tube, diode, or crystal unit
										F			10,11	By replacement of main assemblies, entire tuned cavities, resistors, coils, capacitors, AFC motor, or the entire Bandpass Filter F-691/TRC-24
			F										2,3,15	Voltage and resistance measurement of tubes includes tests of AFC motor B-501
			H										3,4,5,6,13, 14,15,16	All tests
						H							1,3,6,8	Align AM-3203A/TRC-24, AM-3204A/TRC-24, and F-691/TRC-24
							H						6	F-691/TRC-24 only
										H			10,11	All repairs
			D										6,7,15,16	All tests except for Oscillator-Multipliers O-902, O-903, and O-904/TRC-24
												D		Includes case, Accessories CY-3901/TRC-24; case, standardized components, Electrical CY-1338/TRC; case, standardized components, electrical CY-1344/TRC

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-3668A/TRC-24 (Continued)													
	AMPLIFIER-CONVERTER AM-3203A/TRC-24				O									Adjust front panel controls to obtain proper meter readings
			O										12	Test tubes and find symptoms for defective crystals
										O			9	By replacement of crystals, tubes, or diodes
										F			10,11	By replacing main assemblies, AFC motor, input coupler, mixer hybrid, and defective circuit components
			F										2,3	By voltage and resistance measurements of V501, V502, V503, and V504. Also test the AFC motor B-501
			H										3,6,13,16	Test performed with AM-3203A/TRC-24 and the dummy filter installed in R-417 to meet the performance standards of AM-3203A
										H			10,11	All repairs
						H							3,6,8	
			D										6,7,16	All tests
												D		

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-36668A/TRC-24 (Continued)													
	AMPLIFIER-CONVERTER AM-3204A/TRC-24				O									Front panel controls
			O										12	Test tubes
										O			9	By replacement of defective fuse or electron tube
			F										15	To find defective connector or defective filter FL-602
										F			10,11	By replacing entire tuned cavities or other circuit elements found defective by TEST meter indications
										H			10,11	All repairs
						H							1	
			H										13,15,16	With O-902A, O-903A, or O-904A
			D										15,16	Power Supply PP-685( )/TRC should be tested before it is employed in this test
												D		
	OSCILLATOR-MULTIPLIER O-902/TRC-24, O-903/TRC-24, OR O-904/TRC-24									O			9	By replacement of crystal unit and electron tubes
			O										12	Test electron tubes
						O								By adjusting L723, L724, C740, C741, and C742
										F			10,11	By replacement of all maintenance parts
			F										2	Voltage and resistance measurements of V701, V702, and V703
										H			10,11	All repairs, including tuned cavity Z701
			H										13,15,16	All test with the transmitter tuning head AM-3204A/TRC-24 installed .
												D		

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	OA-3668A/TRC-24 (Continued)													
	FILTER, BANDPASS F-691/TRC-24									F			10,11	By replacing the entire unit
										H			10,11	All repairs
						H							6	
							H						6	
			H										4,5,6,14,16	
			D										6	Requires Receiver R-417 and the tuning head AM-3203A/TRC-24
												D		
	ANTENNA AT-903/G									#				See TM 11-5820-517-12P
														#Indicates that maintenance guidance will be found in documents referenced in remarks column

SECTION XXIII. TOOL AND TEST EQUIPMENT REQUIREMENTS (OA-3668A/TRC-24)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	H	NO. 10 ALLEN WRENCH		
2	F	MULTIMETER ME-26/U	6625-360-2493	
3	F,H	MULTIMETER TS-352/U	6625-242-5023	
4	H	VOLTMETER, ELECTRONIC ME-30/U	6625-643-1670	
5	H	SIGNAL GENERATOR SG-71/FCC	6625-669-0255	
6	H,D	SIGNAL GENERATOR AN/URM-64	6625-283-9621	
7	D	SIGNAL GENERATOR AN/USM-44	6625-669-4031	
8	H	FREQUENCY METER AN/URM-80	6625-649-4286	
9	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
10	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
11	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
12	O,F,H	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	
13	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	
14	H	DEVICE, SEMICONDUCTOR, DIODE MX-3671/U	6625-964-9248	
15	F,H	WATTMETER, RF ME-82/U	6625-511-4397	
16	H	FREQUENCY METER TS-186( )/UP	6625-556-1916	

SECTION XXIX. MAINTENANCE ALLOCATION CHART (AN/TRA-25, AN/TRA-25A AND AN/TRA-25B)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADIO SET GROUP AN/TRA-25, AN/TRA-25A, AND AN/TRA-25B							C						Install Antenna Assembly AS-1082/TRA-25 and Antenna AT-903/G
										C				By replacing parts with running spares in AM-2537/TRA-25 only
			O										8	Test electron tubes
										O			1	By replacing electron tube; RF Cable Assemblies; Crystal Units, Quartz; Semiconductor Device, Diode CR-601; and other Organizational Maintenance parts in major component units
			F										4	By voltage and resistance measurements of O-734( )/TRA-25 or O-735( )/TRA-25 only
										F			2,3	By replacing entire tuned cavities and filters in AM-2537/TRA-25, except Preselector Assembly in CV-932/TRA-25
			H										5,6,7,9, 10,13	Test the two tuning heads AM-2537/TRA-25 and CV-932/TRA-25
						H							4,7,9,11,12	Same tuning heads
										H			2,3	By replacing all maintenance parts except Bracket, Flanged; Connector, Block Assembly; Spacer Sleeve; Clamp; Mixer Assembly; Preselector Assembly
			D										6,7,9	Tuning heads only
										D			2,3	All repairs

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRA-25, AN/TRA-25A AND AN/TRA-25B (Continued)													
	AMPLIFIER-CONVERTER AM-2537/TRA-25									C				By replacing parts with running spares
			O							O			8	Test electron tubes
													1	By replacing electron tubes; RF Cable Assemblies; Crystal Units, Quartz; Keys, Socket Head
			F										4	By voltage and resistance measurements of Tubes V301, V302, and V303 only
										F			2,3	By replacement of defective components isolated by testing, including entire tuned cavities and filters, and by repair of RF Cable Assemblies
										H			2,3	By replacement of all maintenance parts except Bracket, Flanged; Connector, Block Assembly
			H										6,10,13	The Oscillator-Multiplier O-734( )/TRA-25 or O-735( )/TRA-25 required
						H							9,11,12	Align O-734( )/TRA-25 or O-735( )/TRA-25, the mixer cavity and calibrate the dials
			D										6,9	Consists of the dial calibration, the tuning head power output check, and the test of the low power alarm and the directional coupler
										D			2,3	All repairs

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRA-25, AN/TRA-25A AND AN/TRA-25B (Continued)													
	OSCILLATOR-MULTIPLIER O-734/TRA-25; O-734A/TRA-25 OR OSCILLATOR-MULTIPLIER O-735/TRA-25; O-735A/TRA-25		O										8	Test electron tubes
										O			1	By replacing Tubes V301, V302, V303, or V304; Crystal Unit, Quartz Y301
			F										4	By voltage and resistance measurement of all tubes except V304
										F			2,3	By replacing defective parts isolated by testing. Includes replacement of the tuned cavity Z1
										H			2,3	By replacement of all maintenance parts except Bracket, Flanged; Connector, Block Assembly
			H											See the test equipment for testing F-Band Transmitter Tuning Head AM-2537/TRA-25
						H							11,12	Use Wattmeter AN/URM-98 with the Attenuator, Variable CN-762/U when adjusting the REC OSC INJ control for 30 mw power output
										D			2,3	All repairs

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/TRA-25, AN/TRA-25A AND AN/TRA-25B (Continued)													
	MIXER STAGE, FREQUENCY CV-932/TRA-25									O			1	By replacing RF Cable Assembly and Semiconductor Device, Diode CR-601
										F			2,3	By replacing all maintenance parts except some depot maintenance parts such as Mixer Assembly; Preselector Assembly; Spacer Sleeve; Clamp
			H										5,6,7,9,13	Requires the B-band Receiver Tuning Head AM-913/TRC
						H							4,7,9	
										H			2,3	Same as Direct Support repair
			D										6,7	
										D			2,3	All repairs
	ANTENNA ASSEMBLY AS-1082/TRA-25							C						
										O			1	By replacement of RF Cable Assemblies; Coupler; and Cover, Antenna only
										F			2,3	By replacing all maintenance parts
										D			2,3	All repairs including Case, Antenna CY-2853/TRA-25
	ANTENNA AT-903/G									#				See TM 11-5820-517-12P
										O			1	By replacement of RF Cable Assembly; Clamp Assembly; Horn, Waveguide; and Support, Antenna AB-720/G only
										F			2,3	By replacing all maintenance parts
														#Indicates that maintenance guidance will be found in documents referenced in remarks column

SECTION XXX. TOOL AND TEST EQUIPMENT REQUIREMENTS (AN/TRA-25, AN/TRA-25A AND AN/TRA-25B)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
4	F,H	MULTIMETER ME-26/U	6625-360-2493	
5	H	MULTIMETER TS-352B/U	6625-242-5023	
6	H,D	FREQUENCY METER TS-186D/UP	6625-556-1916	
7	H,D	SIGNAL GENERATOR AN/URM-49	6625-669-5131	
8	O	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	
9	H	WATTMETER ME-82/U	6625-511-4397	
10	H	WATTMETER AN/URM-120	6625-813-8430	
11	H	WATTMETER AN/URM-98	6625-566-4990	
12	H	ATTENUATOR, VARIABLE CN-762/U	5905-893-8669	
13	H	TRANSFORMER, VARIABLE, POWER TF-171/USM	6120-503-0632	

SECTION XXXI. MAINTENANCE ALLOCATION CHART (CX-4693/U, CX-2251/U)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4693C/U AND CABLE ASSEMBLY, POWER, ELECTRICAL CX-2251/U									F			2	By replacement of Connector, Plug, Electrical
	REEL, CABLE RC-405/TR									O			1	Minor repair or replacement of the entire unit

SECTION XXXII. TOOL AND TEST EQUIPMENT REQUIREMENTS (CX-4693/U, CX-2251/U)

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, OPERATIONS CENTRAL TK-101/G	5180-064-5178	
2	F	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT / ASSEMBLY / SUBASSEMBLY	MAINTENANCE FUNCTION	TOOLS AND EQUIPMENT	REMARKS

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL NUMBER	NOMENCLATURE	REFERENCE CODE	REMARKS